General Disclaimer

One or more of the Following Statements may affect this Document

- This document has been reproduced from the best copy furnished by the organizational source. It is being released in the interest of making available as much information as possible.
- This document may contain data, which exceeds the sheet parameters. It was furnished in this condition by the organizational source and is the best copy available.
- This document may contain tone-on-tone or color graphs, charts and/or pictures, which have been reproduced in black and white.
- This document is paginated as submitted by the original source.
- Portions of this document are not fully legible due to the historical nature of some
 of the material. However, it is the best reproduction available from the original
 submission.

Produced by the NASA Center for Aerospace Information (CASI)

MISSION ANALYSIS PROGRAM FOR SOLAR ELECTRIC PROPULSION (MAPSEP)

CONTRACT NAS8-29666

(Revised) October, 1974

(NASA-CR-143935)MISSION ANALYSIS PROGRAM FOR SOLAR ELECTRIC PROPULSION (MAPSEP). VOLUME 2: USER'S MANUAL (Martin Marietta Corp.) 185 p HC \$7.00 CSCL 21C

N75-31212

Unclas

G3/20

35800

VOLUME II - USER'S MANUAL

Prepared by:

G.L. Shults R.J. Boain K.R. Huling T. Wilson P.E. Hong



Planetary Systems Mission Analysis and Operations Section Denver Division Martin Marietta Corporation

For

National Aeronautics and Space Administration Marshall Space Flight Center Huntsville, Alabama



FOREWORD

MAPSEP (Mission Anslysis Program for Solar Electric Propulsion) is a computer program developed by Martin Marietta Aerospace,

Denver Division, for the NASA Marshall Space Flight Center under

Contract NAS8-29666. MAPSEP contains the basic modes: TOPSEP

(trajectory generation), GODSEP (linear error analysis) and SIMSEP

(simulation). These modes and their various options give the user

sufficient flexibility to analyze any low thrust mission with respect

to trajectory performance, guidance and navigation, and to provide

meaningful system related requirements for the purpose of vehicle

design.

This volume is the second of three and contains the input/
output description of MAPSEP and other user related information.
Other volumes relate to analytical program descriptions and to
program logical flow.



TABLE OF CONTENTS

		<u>Page</u>
Foreword		i
Table of Contents		ii
1. Introduction		1
2. Input		2
2.1 Trajector	y - \$TRAJ Input Description	4
2.2 TOPSEP In	put Description	13
2.3 GODSEP In	put Description	21
2.3.1 Na	melist \$GØDSEP	22
2.3.2 Me	asurement and Propagation Schedule Input	34
2.3.3 Na	melist \$GEVENT	36
2.4 SIMSEP In	put Description	37
2.5 REFSEP In	put Description	52-E
3. Output and Sam	ple Cases	53
3.1 Card and	Tape Output	53
3.2 Printout	and Sample Cases	53
3.2.1 TO	PS≝P	55
3.2.2 GO	DSEP	80
3.2.3 SI	MSEP	117
3.2.4 RE	FSEP	132-1
4. Operating Guid	elines	133
4.1 Trajector	y Generation - TOPSEP	135
4.1.1 Tr	ajectory Propagation	138
4.1.2 Tr	ajectory Grid	138
4.1.3 Tr	ajectory Targeting	139
4.2 Linear Er	ror Analysis - GODSEP	151
4.2.1 × ST	M File Generation	155

			Page
•	4.2.2	Standard Covariance Analysis	157
	4.2.3	Combined STM File Generation and Error Analysis	164
	4.2.4	Generalized Covariance	165
	4.2.5	PDOT	166
4.3	Trajec	tory Simulation - SIMSEP	168
	4.3.1	Single Cycle - No Error	169
	4.3.2	Single Cycle - Forced Monte Carlo	171
	4.3.3	Monte Carlo	174
	4.3.4	Monte Carlo Continuation	176
4.4	Case S	tacking and Mixed Mode Operation	178
5. Refe	rences		180

1. INTRODUCTION

This manual provides the user of MAPSEP (Mission Analysis

Program for Solar Electric Propulsion) with all the information

necessary to input the program and to obtain meaningful output.

In addition to listing all the input variables, their definitions,

units, etc., there are chapters discussing recommended usage and

limitations, and sample runs.

MAPSEP is composed of three primary modes, each of which performs a given function in a trajectory analysis. TOPSEP (Targeting and Optimization for SEP) evaluates performance by generating realistic integrated trajectories which meet whatever mission and system constraints are imposed by the user. GODSEP (Guidance and Orbit Determination for SEP) evaluates trajectory dispersions, using linear error analysis techniques, in the presence of dynamic and navigation uncertainties. SIMSEP (Simulation for SEP) deterministically simulates single or multiple trajectories in the presence of discrete system errors.

For the user who is unfamiliar with MAPSEP, it is recommended that he first study, briefly, Chapters 2 and 3 on Input and Output, respectively, to familiarize himself with some of the nomenclature and options. Next, a careful study of Chapter 4 on Operating Guidelines will yield considerable insight on MAPSEP Usage. The user can then return to Chapters 2 and 3 for specific information on his particular application. Finally, as additional background information, it is recommended that the Analytic Manual (Reference 1) and Program Manual (Reference 2) be referred to extensively.

2.0 INPUT

The basic input to MAPSEP is in the form of namelist data, fixed field cards and magnetic tape. This chapter describes all available input. Chapter 4 will discuss the organization of this input for specific analysis functions.

All MAPSEP modes require the namelist \$TRAJ which contains reference trajectory and spacecraft characteristics. If desired, this namelist can be written on a disc file (STM) and eventually stored on magnetic tape to facilitate later runs or stacked cases in the same run. Following \$TRAJ is mode peculiar input.

The reference trajectory generation mode (TOPSEP) requires the namelist \$TØPSEP to follow \$TRAJ. \$TØPSEP contains parameters that determine the strategy for generating a trajectory which meets desired target conditions and mission constraints. The reference trajectory defined in \$TRAJ is used as the initial guess.

The linear error analysis mode (GODSEP) requires the namelist \$GØDSEP immediately after \$TRAJ. \$GØDSEP contains system uncertainties and navigation and guidance related data to perform a covariance analysis about the reference trajectory. Following \$GØDSEP, fixed field cards are input to describe measurement and propagation schedules. Two disc files or tapes are often used: STM and GAIN. These files contain trajectory and transition matrix data (STM) and a-prioricovariances and orbit determination filter gains (GAIN) to improve computational speed and to provide additional flexibility. Another namelist \$GEVENT is optional and contains guidance event information.



The trajectory simulation mode (SIMSEP) requires the namelist \$SIMSEP to follow \$TRAJ. \$SIMSEP contains parameters which describe the scope of the simulation, expected dynamic errors, and cumulative statistics from previous SIMSEP runs. Following \$SIMSEP are a set of \$GUID namelists, one for each guidance correction maneuver. \$GUID describes the strategy, knowledge or estimation uncertainties and cumulative statistics for that particular maneuver.

The trajectory display node (REFSEP) requires only the namelist STRAJ followed by scheduling cards, similar to those used in GODSEP. The fixed field schedule cards define: types of data displayed, span of interest, and frequency of printout.

For those users who can vary the amount of blank common storage in their runs, a guideline to estimate the total MAPSEP core requirements is given below. Blank common length is related directly to the dimension of the dynamic state (NDIM) used in transition matrix (STM) computation, and, the total augmented (knowledge) state (NAUG). The values of "program" and "blank common" must be added to compute the total decimal core for a CDC 6500. Other operating systems must scale these requirements appropriately.

```
= 23400
TOPSEP:
             program
                                                                        (N = number of control parameters)
             blank common = 800 + 68(N)+(N)^2
GODSEP:
             program
                               = 23900
             blank common = 100 + 9 \text{ (NDIM)}^2
= 100 + 9 \text{ (NDIM)}^2 + 5 \text{ (NAUG)}^2
                                                                      (if STM created)
                                                                      (if STM used)
                               = 100 + 13 \text{ (NAUG)}^2
                                                                      (if PDOT used)
                                                                        (N = number of
                               = 39100
SIMSEP:
             program
             blank common = 900 + N(NAUG)^2
                                                                              guidance
                                                                              events)
```

REFSEP: program + blank common = 21000

2.1 Trajectory - STRAJ Input Description

The namelist \$TRAJ, which is read in by DATAM, contains reference trajectory and spacecraft related information for ballistic or low thrust missions. Many of the variables have adequate default values such that the user only has to input those which are different. The variables are grouped as either trajectory, spacecraft or miscellaneous parameters.

Namelist &TRAJ:

a) Trajectory Parameters:

Variable	Dim	Default	Units	Definition
STEP	1	0.05		Scaling factor of the integration step size.
BØDYIN	16×1			This array allows the user to input ephemeris data for a body that is not already included in MAPSEP (Planet Code is 10). The default values are those of the comet Encke. Orbital elements are of the form X(t) = X + x t where X o is a constant, x is the rate of change and t is the time in Julian Centuries.
BØDYIN(1)		24445 80.0	days	Julian date of ephemeris epoch.
BØDYIN(2)		500.0	lan ,	Mean equational radius.
BØ DYIN(3)		1000.0	kon	Radius of the sphere of influence.
BØDYIN(4)		10 ⁻⁹	km ³ /sec ²	Gravitational constant.

			· •	
<u>Variable</u>	Dim	Default	Units	Definition
BØDYIN(5)		331 80812.67	km	Semi-major axis (a).
BØDYIN(6)		0.0	Km/J.C.*	Time derivative of the semi- major axis.
BØDYIN(7)		0.847		Eccentricity (e).
BØDYIN(8)		0.0	1/J.C.	Time derivative of the eccentricity.
BØDYIN(9)		11.95	deg	Inclination of the orbit plane (i).
BØDYIN(10)		0.0	deg/J.C.	Time derivative of the inclination.
BØDYIN(11)		334.2	deg	Longitude of the ascending node (Ω).
BØDYIN(12)		0.0	deg/J.C.	Time derivative of $oldsymbol{\Omega}$.
BØDYIN(13)		160.2	deg	Longitude of periapsis (2).
BØDYIN(14)		0.0	deg/J.C.	Time derivative of ω .
BØDYIN(15)		0.0	deg	Mean Anomaly (M) at ephemeris epoch.
BØDYIN(16)		0.0	deg/J.C.	Mean motion (n); computed internally if input as zero.
DRMAX		103	km	Maximum deviation from the reference conic before rectification.
FRCA		0.4		Scale factor of the target planet semi-major axis used as the maximum S/C-target distance below which the closest approach test begins this avoids local minima, or "false" closest approaches, especially for inner planet missions.

^{* -} J.C. is a Julian Century (36525 days exactly).



Variable	Dim	Default	Units	Definition
IAUGDC	10	10*0		Flags used to identify the augmented dynamic state for GODSEP in the STM file generation submode. Non-zero entries will activate a parameter.
IAUGDC(1)				S/C position and velocity vectors
IAUGDC(2)				Thrust bias: proportionality, cone and clock.
IAUGDC (3)				Heliocentric state of ephemeris body.
TAHODO (A)				Gravitational constant of
IAUGDC (4)				ephemeris body.
IAUGDC(5)				Gravitational constant of sun.
IAUGDC (6)				Not used.
IAUGDC(7)				Not used.
IAUGDC (8)				Not used.
IAUGDC(9)				Not used.
IAUGDC(10)				Not used.
ICØØRD	1	0		Planet code (see next page) of reference body of input state (STATE); positive values indicate 1950.0 eclip- tic inertial coordinates; a value of -3 indicates geo- centric equatorial coordinates.

CODE	PLANET
0	Sun
1	Mercury
2	Venus
3	Earth
4	Mars
- 5	Jupiter
6	Saturn
7	Uranus
8	Neptune
9	Pluto
10	User Specified
11	Moon



<u>Variable</u>	Dim	Default	Units	Definition
ISTØP	1	1		The trajectory termination flag. There are four possible criteria for terminating the trajectory.
				<pre>= 1, final time (TEND) = 2, closest approach = 3, sphere of influence = 4, stopping radius (RSTØP)</pre>
NB	11	11*0		This array is used to input the bodies to be considered in the trajectory propaga- tion. The entries in NB,
				correspond to the non-zero values of the planet codes. The sun is automatically included.
NEP		0		Planet code of ephemeris body in IAUGDC(3); internall set to NTP if entered as zero.
NTP	1	•		The planet code of the target body.
RSTØP		31096.5	km	The stopping radius must be specified when ISTØP is set to 4. The default value is set for a synchronous Earth orbit.
STATE	6	6*0.0	ko, km/sec	The initial position and velocity vector of the spacecraft. (See ICOORD).
TEND		0.0	days	The trajectory termination time, t _{final} , relative to launch. The input may be full Julian Date or days from launch.
TLNCH		0.0	days	The Julian Date of the tra- jectory epoch (launch).

(

<u>Variable</u>	Dim	Default	Units	Definition
TSTART	1	0.0	days	The trajectory time associated with the input state. This can be a Julian Date or days from launch.
XBØDY	1	6HENCKE	-	Hollerith label for the input body (BØDYIN).

b) Spacecraft Parameters:

<u>Variable</u>	Dim	Default	Units	Definition
ENGINE	20			This array defines the space- craft thrust subsystem (Section 4.1, Reference 1).
ENGINE (1)		21.65	KW	Useful power from the solar array at 1 AU (Po).
ENGINE (2)		•65	KW	Housekeeping power (P _{HK}).
ENGINE (3)		21.65	KW	Maximum power when r r rmin (Pmax). See ENGINE(9).
ENGINE (4)		1,4382		Power Constant (C ₁).
ENGINE (5)		0.0		Power Constant (C ₂).
ENGINE(6)		-0.2235		Power Constant (C ₃).
ENGINE (7)		0.0		Power Constant (C ₄).
ENGINE (8)		-0.2147		Power Constant (C ₅).
ENGINE (9)		1.0	AU	Heliocentric distance for which the power is a maximum (r_{min}) .
ENGINE(10)		29.418	km/sec	Ion exhaust velocity (c).
ENGINE (11)		1.0		Thruster efficiency (7).
ENGINE (12)		0.0	1/sec	Power loss (P _L).
ENGINE (13)		0.0	days	Time decay of power loss prior to start of the mission.

Variable	Dim	Default_	Units	Definition
ENGINE (14)		-	- -	Not used.
ENGINE(15)		-1.0	(meters) ²	Radiation pressure coefficient times the effective cross-sectional area of the solar arrays (C _R A). If negative
ENGINE (16)		1.0		no radiation pressure. Scale factor on ENGINE(15) when r < r
IENRGY	1	1		This flag determines the type of power subsystem.
				0 - Ballistic 1 - Solar Electric Power 2 - Nuclear Electric Power
SCMASS	1	2000.0	kg	Spacecraft mass at TSTART.
THRUST	10×20			This array defines the thrust control policy for the trajectory. Each column contains the controls for each segment of the trajectory for i = 1 to 20 segments. (Section 4.1, Reference 1).
THRUST(1,i)		9.0, 19* 0.		<pre>= 0.0, last thrust phase; = 1.0, the thrust coordinate</pre>
THRUST(2,i)		20*10 ²⁰	days	Days from launch for which the i th phase ends.
THRUST(3,i)		20*1.0		Throttling level (T_L).
THRUST(4,i)		20*0.0	deg	Cone angle when THRUST(1,i) = 1.0. In plane angle when THRUST(1,i) = 2.0.
THRUST(5,1)		20*0.0	deg	Clock angle when THRUST(1,i) = 1.0. Out of plane angle when THRUST(1,i) = 2.0.

Variable	Dim	De fault	Units	Definition
THRUST (6,i)		20*0.0	deg/sec	Cone angle rate when THRUST (1,i) = 1.0. In plane angle rate when THRUST(1,i) = 2.0.
THRUST (7,1)		20*0.0	deg/sec	Clock angle rate when THRUST (1,i) = 1.0. Out of plane angle rate when THRUST(1,i) = 2.0.
THRUST (8,1)		20*1.0		The number of thrusters. This is required only for GØDSEP and SIMSEP.
THRUST (9,1)			•	Not used.
THRUST (10,1)				Not used.
28		0, 0, 1		Direction cosines of the star used as a reference for the Cone and Clock system. Default value is the south ecliptic.

c) Miscellaneous Parameters

Variable	Dim	Default	Units	Definition
EDIT	50	50*0.0		This array is used for storage related to temporary program modifications.
IPRINT	1	0		This flag controls trajectory print.
				> 0, Print every IPRINT integration steps. = 0, No print. = -1, Print every XPRINT days. = -2, Print every event.
				IPRINT = -1 should rarely be used, especially in the GØDSEP mode. It is suggested to set IPRINT = 20000. The

result will be prints at



<u>Variable</u>	Dim	Default	Units	Definition
				initialization, at every primary body and thrust control phase change, and at termination.
ISTMF	1	1		This flag is used in conjunction with the STM file and the namelist \$TRAJ.
				<pre>= 0, Ignore. = 1, Write the namelist \$TRAJ onto disc; create the STM file if the mode is GODSEP. = 2, Read \$TRAJ from disc; read the STM file if</pre>
				the mode is GODSEP. = 3, The same as 2, but also read the a-priori covariances from the GAIN file if the mode is GODSEP. = 4, Read \$TRAJ from disc and
				update with a <u>second</u> in- put \$TRAJ namelist.
MØDE		2		This flag indicates the operating mode of MAPSEP. Positive values will recycle back to MAPSEP main, while negative numbers will return to the main of the mode. This feature allows the user to run stacked cases.
				= ±1, Targeting and Optimization (TØPSEP). = ±2, Error Analysis (GØDSEP). = ±3, Simulation (SIMSEP).
PRNML	1	F		Do (T), do not (F) print in- put namelist \$TRAJ
XPRINT		10 ²⁰	days	Trajectory print frequency. Must be specified when IPRINT = -1 (MPRNT = -1 in \$TØPSEP)

d) REFSEP Parameters

Variable	Dim	<u>Default</u>	Units	Definition
ELVMIN	1	0.	deg	Minimum elevation angle for tracking S/C or target body
I Ø BS	1	9		Column in STALOC array containing the station location of the astronomical observatory (see STALOC below)
KARDS	1	0		Number of formatted print schedule cards to be read in after the \$TRAJ namelist
STALØC	3x9		Mixed	Array of station locations in either of the following sets of units (if STALØC (1,1)>90., then cylindrical coordinates are assumed, otherwise, spherical).
				STALOC (1,I) = spin radius (km) STALOC (2,I) = longitude (deg) STALOC (3,I) = Z-height (km)
				or STALØC (1,I) = latitude (deg) STALØC (2,I) = longitude (deg) STALØC (3,I) = altitude (km)
				default stations are: 1 - Goldstone (5200.234, - 116.833 3693.429) 2 - Madrid (4855.414, -3.667, 4134.766) 3 - Canberra (5204.135, 149.136, -3686.233)
				9 - Kitt Peak (4185.171, 250.000, 4814.489

Note: STALØC is also an input parameter to \$GØDSEP with the same meaning.

2.2 TOPSEP Input Description

The input for the TOPSEP mode is transmitted via the namelists

\$TRAJ and \$TØPSEP. \$TRAJ contains the basic trajectory and spacecraft information for a nominal low thrust mission. \$TØPSEP contains
the necessary parameters to alter the nominal trajectory in order to
obtain a more desirable trajectory. All namelist vairables assume
the program default values if they are not specified by input. In
addition, once a variable has been set by namelist input or by
default, it will resume that value at the beginning of all succeeding stacked cases even though the value may have been changed by
the program during any one stacked case.

Namelist &TOPSEP:

<u>Variable</u>	Dim	Defau1t	Units	Definition
BTØL	1	•05		Tolerance on control bounds within which a modified control correction may be implemented (See Page 143). The tolerance region within the minimum and maximum bounds (ULIMIT(I,1),ULIMIT(I,2)) is defined by BTOL x (ULIMIT(I,2)-ULIMIT(I,1)).
DFMAX	1	1000.		Maximum increase allowed in the cost index per iteration (decimal percent of nominal cost index value) (See Page 146)
DP2	1	0.04		Estimated region of linearity (See Page 150).

Variable	Dim	Default	Units	Def_nition
EPSØN	1	0.0		Scalar multiple for control perturbation; if no acceptable control step, then a new sensitivity matrix will be calculated based upon the revised perturbations H(I,J) = H(I,J) X EPSØN.
G	20x1	20*0.0		Performance gradient (may be input if available from a previous computer run) (See Page 146).
GTRIAL	5x1			One-dimensional search constants (See Page 144). Let P = P (T) be the function to be minimized (the cost index and/or the error index) and T be the step size scale factor to be optimized, then
GTRIAL(1)		0.1		\mathfrak{T}_{i+1} may not be less than \mathfrak{T}_{i} x GTRIAL(1).
GTRIAL(2)		5.0		T may not be greater than GTRIAL(2).
GTRIAL(3)		0.01		If the Λ % of Υ_{i+1} to Υ_{i} is less than GTRIAL(3) then $P(\Upsilon)$ is considered minimized
GTRIAL(4)		1.E-15		If the Δ % of the estimated P_i to the actual P_i is less than GTRIAL(4) then $P(\mathcal{T})$ is considered minimized.
GTRIAL(5)		4.0		Real flag designating the extent of the curve fitting in the new control direction.
				<pre>= 1., two-point-one-slope fit = 2., three-point-one-slope fit; = 3., three-point fit; = 4., four-point fit. (e.g., GTRIAL(5) = 4. indi- cates that all four curve fitting tech- niques may be applied in the preceding order).</pre>

<u>Variable</u>	Dim	Default	Units	Definition
H 10x22 220*0.		220*0.	Mixed	Array of control designations. A non-zero value indicates the associated parameter is a control. If IASTM = 0, values of H are perturbations used in finite differencing.
				<pre>IASTM = 1, values of H are used</pre>
				The first 20 columns of H correspond to elements of the THRUST array (See Page 10) (e.g., H (4,1) = .1 identifies the cone angle of the first phase as a control. Note: THRUST (I,J), I = 2,7 and J = 1,20 are the only valid thrust controls). The last two columns of H correspond to the parameters listed below. When the grid mode is operative the H array represents the first step for the selected controls (See HMULT for designating second step).
H(1,21) H(2,21) H(3,21) H(4,21) H(5,21) H(6,21) H(7,21) H(8,21)			km km km km km km/sec km/sec km/sec km/sec	Parameters Selected as Controls x, STATE(1) y, STATE(2) z, STATE(3) r, STATE(7) x, STATE(4) y, STATE(5) z, STATE(6) v, STATE(8) Geocentric or Heliocentric Ecliptic Initial State
H(9,21) H(10,21) H(1,22)			km deg sec	radius of parking orbit, ro inclination of parking orbit, i injection time in parking orbit, to
H(2,22) H(3,22) H(4,22) H(5,22) H(6,22) H(7,22)			km/sec deg deg kw km/sec kg	injection Δv in-plane Δv direction angle, \times out-of-plane Δv direction angle, v base power at 1 au, ENGINE (1) exhaust velocity, ENGINE (10) initial mass, SCMASS

Variable	Dim	Default	Units	Definition
HMULT	20	20*0		Scalar multiple of non-zero ele- ments of the H array (max of 20) used to define the second step in the grid mode. See p. 138.
IASTM				Flag designating the method of computing the targeting sensitivity matrix = 0, finite differencing by means of perturbed trajectories = 1, integrated state transition matrices If IASTM = 1 the parameters available as controls are restricted. See Page 140.
IMØDE	1	2		TØPSEP submode designation.
				 = 1, reference trajectory propagation. = 2, target and optimize. = 3, generate trajectory grid.
INSG	1	0		If flag set to 1, then target sensitivities S and the performance gradient G are input; if flag left 0, ignore (See Page 146).
IWATE	1	1		Type of control weighting (See Page 141-A). = 1, unity weighting. = 2, normalized control weighting. = 3, sensitivity weighting. = 4, combined sensitivity, target error, and control weighting. = 5, target gradient weighting. = 6, averaged gradient and control weighting.
JWATE	1	0		Target weighting flag (See P. 142)
				 = 0, do not weight target variables. = 1, use tolerances to weight targets.

Variable	Dim	Default_	Units	Definition
MPRINT	10×1	10*0		
MPKINI	TOXI	100		Print option flags.
				=-1, print every XPRINT
				days and at control phase and primary
				body changes.
				= 0, no trajectory print.
				= I, print every I inte-
				gration steps.
				MPRINT(1), reference trajec-
				tory and grid print.
				MPRINT(2), perturbation tra- jectory print.
				MPRINT(3), trial trajectory
				print.
				MPRINT(4), supplementary
				print for targeting mode.
				MPRINT(5) - (10), not used.
MAX	1	1		Maximum number of iterations allowed.
				Toward Transfer of the Control of th
ØPTEND	1	89.999	deg	Optimization termination
				angle; optimization is
				considered complete when
				$\cos \theta = G \cdot \Lambda U_2$
				$\cos \theta = \underline{\underline{G} \cdot \underline{\Lambda} \underline{U}_2}_{ \underline{G} \times \underline{\Lambda} \underline{U}_1 }$
				approaches 0 (when θ
				approaches 90 deg). If
				ØPTEND < 9 < 90 optimization
				is considered complete. If
				ØPTEND is set to 0 deg
				TOPSEP will generate a tar- geted but not optimized
				trajectory.
ØSCALE	1	1.0		Scale on performance index
				for simultaneous targeting
				and optimization (See P. 149)
PCT		0.2		Fraction of target error to
	grindije et			be removed in the first
				iteration (See P. 143).
PRNML	1			Do (T), do not (F) print
				input namelist \$TØPSEP
in the case of the Control of the co				化铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁铁

(1)

Variable	Dim	<u>Default</u>	Units	Definition
S	6×20	120*0.0	Mixed	Target sensitivities (may be input if available from previous computer run) See Page 146.
STØI.		0.001		Minimum difference allowed between the inner products of the columns of the sensitivity matrix and the inner product of exactly linearly dependent vectors. If \underline{S}_1 and \underline{S}_2 represent the first two columns of the S matrix and $1 - \left[\frac{\underline{S}_1}{ \underline{S}_1 } * \frac{\underline{S}_2}{ \underline{S}_2 } \right] < STØL$
				then the two columns are considered linearly dependent and the control associated with one of the columns (U(1) or U(2)) will be dropped from further consideration during the current iteration. (See Page 142)
TARGET	6x1	6*0.0	Mixed	Target values; must be input in the same numerical order as indicated by the index on the TARTØL vector.
TARTØL	25x1	25*0.0		Vector of target tolerances; a non-zero value of any component indicates that the associated target parameter will be included in the targeting process. The desired target value is input in TARGET. The targets are evaluated at the stopping condition. (ISTOP in \$TRAJ). The associated target parameters with respect to the target body are as follows.
TARTØL(1)			km	(1) x-comp of target body relative state.
TARTØL(2)			km	(2) y-comp of target body relative state.

سقعد		
4	- 1	· &
1	- 1	-
\	- 1	. 1
C.		7
		£
	-	

<u>Variable</u>	Dim	Default	Units	Definition
TARTØL(3)			km	(3) z-comp of target body relative state.
TARTØL(4)			icm	(4) r , radial distance from target body.
TARTØL (5)			km/sec	(5) *-comp.
TARTØL(6)			km/sec	(6) ÿ-comp.
TARTØL (7)			km/sec	(7) z-comp.
TARTØL(8)			km/sec	(8) v , velocity magnitude.
TARTØL(9)			km/sec	(9) V _{HP} , hyperbolic excess velocity.
TARTØL(10)			km	(10) RCA, radius of closest approach.
TARTØL(11)			lan.	(11) B·T, B-plane coordinate.
TARTØL(12)			kin	(12) B·R, B-plane coordinate.
TARTØL(13)			da ys	(13) TSØI, time at sphere of influence.
TARTØL(14)			days	-(14) TRCA, time at closest approach.
TARTØL(15)			lan	(15) a, semi-major axis.
TARTØL(16)				(16) e, eccentricity.
TARTØL(17)			deg	(17) i, inclination.
TARTØL(18)			deg	(18) A , longitude of ascending node.
TARTØL(19)			deg	(19) ω, argument of periapsi
TARTØL (20)			deg	(20) MA mean anomaly.
TARTOL(I)				I = 21,25 not used.



Variable	Dim	Default Units	Definition
TLØW	1 1 1 1 1	1.0	Limit of quadratic error index (EMAG) below which optimization only is performed. (See Page 150).
TUP	1	1.0	Limit of quadratic error index (EMAG) above which simultaneous targeting and optimization is discontinued and targeting only is initiated. (See Page 150).
ULIMIT	20x2	20*(-10 ²⁰ , Mixed	Minimum and maximum bounds on the controls in the con- trol vector. The units are the same as those of the controls (See Page 141-A).
UWATE	20x1	20*1.0 -	User input control weight- ings which are applied for all choices of the variable IWATE.

Tug Parameters

Variable	Dim	Default	Units	Definition
AZMAX	1	120.	deg	Maximum launch azimuth constraint for inner parking orbit (launch from Cape Kennedy)
AZMIN	1	35.	deg	Minimum launch azimuth con- straint for inner parking orbit (launch from Cape Kennedy)
RP1	1	6567.26	km	Inner parking orbit radius
TGFUEL	1	10673.0	kg	Maximum weight of fuel for transfer stage
TUGISP	1	309.2	sec	Specific impulse of transfer stage
TUGWT	1	1714.6	kg	Dry weight of transfer stage

2.3 GODSEP Input Description

Three forms of input are used by the error analysis mode. The namelist \$GØDSEP is used to define output, all measurement and event information (except the scheduling of measurements and propagation events), and all covariance initialization and propagation information. Immediately following \$GØDSEP are NSCHED cards defining the scheduling of all measurements and propagation events. The format for these cards, as well as a definition of data type codes, appears after namelist \$GØDSEP is defined.

Following the measurement schedule cards are a series of optional namelists for guidance, each called \$GEVENT. Reading of \$GEVENT is controlled by the guidance flag array IGREAD, described in \$GØDSEP.

Reference is made below in the definitions of IPFØRM and IGFØRM to the "packed" and "unpacked" forms of a matrix. If the solve-for covariance matrix PS is dimensioned 10 x 10, but the current run has only 2 solve-for parameters, the 2 x 2 PS matrix is considered "packed" if the four covariance elements occupy the first four consecutive words of storage for the PS matrix. This can be achieved in namelist input by

$$PS = 9., .63, .63, 4.,$$

If, however, the namelist input contains

$$PS(1,1) = 9., PS(1,2) = .63,$$

$$PS(2,1) = .63, PS(2,2) = 4.,$$

the four elements of PS will occupy words 1, 2, 11, and 12 of the

PS matrix due to internal storage standards and the matrix is termed "unpacked."

2.3.1 Namelist \$GØDSEP - Covariance Initialization and Propagation:

	Dim	Default	Units	Definition
IPFØRM	1	0		= 0, input knowledge standard deviations and correlation co- efficients in packed form (see above for definition of packed and unpacked)
				<pre>= 1, input knowledge in unpacked form.</pre>
P	6x6	1000 km, 50 m/s each com- ponent		Standard deviations and correlation coefficients of state at epoch defined by TCURR
CXS	6x11	0		Correlations between state and solve-for parameters
CXU	6x13	0		Correlations between state and dynamic consider parameters.
CXV	6x15	o		Correlations between state and measurement consider parameters
CXW	6x10	0	4 (1 1 1 <u>1</u> 2 1 1 1 4 4 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Correlations between state and ignore parameters.
PS	11x11	0		Std. dev. and correlation coefficients of solve-for parameters
csv	11x13	0		Correlations between solve-for and dynamic consider parameters
CSV	11×15	0		Correlations between solve-for and measurement consider parameters
CSW	11x10	0		Correlations between solve-for and ignore parameters

<u>Variable</u>	Dim	<u>Default</u>	Units	Definition
PU	13x13	0	• • • • • • • • • • • • • • • • • • •	Std. deviations and correlation coefficients of dynamic consider parameters
CUV	13x15	0		Correlations between dynamic consider and measurement consider parameters
CUW	13x10	0		Correlations between dynamic consider and ignore parameters
PV	15x15	0		Std. deviations and correlation coefficients of measurement consider parameters
CVW	15x10	0		Correlations between measurement considers and ignore parameters
PW	10x10	0		Std. deviations and correlation coefficients of measurement consider parameters
IGFØRM		0		Ignored if CONRD = .FALSE; if CONRD = .TRUE . , =0, input control uncertainties packed =1, input control uncertainties unpacked. (see above definitions of packed and unpacked)
PG CXSG CXUG CXVG CXWG PSG CSUG CSVG CSWG PUG CUVG CUWG				Standard deviations and correlations of control covariance (analgous to P, CXS,, PW); if CØNRD = .FALSE., then control covariance is set to a-priori knowledge; if CØNRD = .TRUE., then control must be input at epoch defined by TG.
PVG CVWG PWG				
CØNRD	1			=F, set apriori control to a priori knowledge =T, assume a-priori control read in namelist (See Page 159)

Variable	Dim	Default	Units	Definition
DYNØIS	1	T		=T, compute effective process noise matrix for use with state transition matrix
				<pre>propagation =F, don't compute effective process noise</pre>
SCMVAR	1	0.	kg	initial S/C mass standard devi- ation
EPSIG	3x2		mixed	Process noise standard deviations used only for STM (not PDOT).
EPSIG(1,1)	.01		Std. dev. in magnitude proportionality noise
E PS IG(2,1) 4: 5:5:	.01	rad	Std. dev. in cone angle noise
EPSIG(3,1)	.01	rad	Std. dev. in clock angle noise
EPS IG(1,2)	0		Std. dev. in secondary process for magnitude proportionality
E PS IG(2,2)	0	rad	Std. dev. in secondary noise process for cone angle
EPSIG(3,2)	0	rad	Std. dev. in secondary noise process for clock angle
EPTAU	3x2		days	EPTAU (I,J) is correlation time for J^{th} noise process
EPTAU(1,1)	4	days	
EPTAU(2,1)	1	days	corresponding to EPSIG (I,J)
EPTAU(3,1)	1	days	and PDOT process noise
EPTAU(1,2)	0	days	(See Page 159)
EPTAU(2,2)	0	days	
EPTAU(3,3)	0	days	
IAUG	50	50*0		Parameter augmentation control IAUG(I) controls augmentation of parameters to state vector as follows
				=0, not used =1, parameter solved-for =2, parameter considered =3, parameter ignored (generalize covariance only)
				IAUG(I) parameters available (1) thrust acceleration proportionality (2) cone angle bias (3) clock angle bias

Variable Dim Default Units Definition **IAUG** (4) through (9) ephemeris planet elements, x,y,z,x,y,z, if IEPHEM=0 or 1 a,e,i, α , ω ,m, if IEPHEM=2 (10) ephemeris body gravitational constant (11) solar gravitation constant (12)-(17) used only if PDØT = TRUE (12) noise process corresponding to EPSIG(1,1)(13) noise process corresponding to EPSIG(2,1)(14) noise process corresponding to EPSIG(3,1)(15) noise process corresponding to EPSIG(1,2)(16) noise process corresponding to EPSIG(2,2)(17) noise process corresponding to EPSIG(3,2)(18) spin radius, station #1 (19) longitude, station #1 (20) z-height, station #1 (21), (22), (23) spin radius, longitude, z-height sta. #2 (24),(25),(26) spin radius, longitude, z-height, sta. #3 (27), (28) 2-way doppler, range bias from sta. #1 (29), (30) 2-way doppler, range bias from sta. #2 (31), (32) 2-way doppler, range bias from sta. #3 (33), (34) 3-way doppler, range bias from sta. # 1,2 (35), (36) 3-way doppler, range bias from sta. # 1,3 (37), (38) 3-way doppler, range bias from sta. # 2,3 (39), (40) azimuth, elevation angle biases from sta. #1 (41), (42) azimuth, elevation angle biases from sta. #2 (43), (44) azimuth, elevation angle biases from sta. #3 (45) star-planet angle bias star #1 (46) star-planet angle bias star #2 (47) star-planet angle bias

star #3

<u>Variable</u>	Dim	Default	Units	Definition
				(48) apparent planet diameter angle bias
				(49) astronomical observation,
				right ascension angle
				(50) astronomical observation,
				declination angle
IEPHEM	1	0		indicates format of ephemeris
				parameters if any flagged
				= 0, time evolving cartesian
				= 1, stationary cartesian
				2, stationary Keplerian
PDØT	1	F		logical flag controlling
				covariance integration
				T, propagate covariance by integration
				F, propagate covariance by state transition matrix
				method
PRØPG	1	F	orenige Antenia	not used for input, overridden
PROPERTY I				internally
SCHFTL	1	T		logical flag
				= T, failure to mesh on STM
				file within tolerances defined by TØLFØR and
				TØLBAK is total
				F, mesh failure not fatal
TCURR	1	TSTART	days	Epoch for input knowledge uncer-
		(STRAJ)		tainties, referenced to TLNCH (if
				PDOT = .TRUE. and TCURR # TSTART,
				(See Section 4.2.5).
TFINAL	1	TEND	days	Error analysis final time,
		(\$TRAJ)		referenced to TLNCH
TG	1	TCURR	days	Epoch for input control uncertain-
				ties if CONRD = T and control epoch different from knowledge epoch
				이 불통 이 시 그리고 말라면 모든 가는 돈다.
TØLBAK	1	1.0	days	Backward tolerance on meshing
			$\{(x,y), (x,y) \in \mathbf{v}(y)\}$	scheduled event times with STM
				file times
TØLFØR	1	.03	days	Forward tolerance on meshing
				scheduled event times with STM
				file times

Measurement Related Variables

<u>Variable</u>	Dim	Default	Units	Definition
CØRLØN	1	.9		Station-to-station longitude correlation for ground-based tracking stations
DØPCNT	1	12	Meas./ Day	Nominal number of dopler measure- ments to be taken per day for scal- ing doppler noise (SIGMES(1) and SIGMES(3))
GAINCR	1	F		Controls GAIN file creation (See Page 162) = T, create GAIN file = F, do not create GAIN file
GENC Ø V	1	F		<pre>= F, current run not generalized covariance = T, generalized covariance run, forces IGAIN = 4</pre>
IGAIN	1	1		Defines OD filtering algorithm = 1, Kalman-Schmidt = 2, sequential weighted least squares = 3, User-supplied filter (See Analytic Manual, Section 6.4) = 4, read filter gain from GAIN file (TAPE 4)
NSCHED	1	0		Number of measurement and propagation event scheduling cards to follow namelist \$GØDSEP
NST	1	3		Number of active DSN station locations defined in STALØC array
SIGLØN	1	3.0	meter	Standard deviation in longitude for equivalent station location errors
SIGMES	15		mixed	Array of measurement white noise standard deviations
SIGMES(1)		1.0	mm/sec	:/1 min sample 2-way doppler
SIGMES (2)		3.0	meter	2-way range
SIGMES (3)		.1	mm/sec	:/l min sample 3-way frequency drift
SIGMES (4)		10.0	meter	3-way range

ariable	Dim	Default_	Units	Definition
SIGMES (5))	1600.	μ -rad	azimuth angle
SIGMES (6))	1600.	μ -rad	elevation angle
SIGMES (7))	150.	⊬ -rad	on-board optics star planet angle
SIGMES (8))	150.	μ -rad	on-board optics apparent planet diameter
SIGMES (9))	10.	km	on-board optics center-finding uncertainty; used in conjunction with star-planet angle
SIGMES (10	0)	3	arc-sec	astronomical observation right ascension
SIGMES (1	1)	3.	arc-sec	astronomical observation declination
SIGMES (12	2)-(15)	•		not used
SIGRS	1	1.5	meter	standard deviation in spin radius for equivalent station errors
STALØC	3x9		mixed	array of station locations (cylindrical coordinates only) STALØC(1,I) = spin radius (km) STALØC(2,I) = longitude (deg) STALØC(3,I) = z-height (km)
				default values for station coordinates are: 1 - Goldstone (5200.234, -116.833, 3693.429) 2 - Madrid (4855.414, -3.667, 4134.766) 3 - Canberra (5204.135, 149.136, -3686.233)
				9 - Astronomical Observatory (Kitt Peak = 4185.171, 250.000, 4814.489
STARDC	3x9			array of ecliptic star direction cosines (or, equivalently, unit vectors in star directions) used for star-planet angle measurements vector locating Jth star loaded in Jth column of STARDC
				default values are (fictitious stars) STARDC(1,1) * .7, .6, .3873 STARDC(1,2) = .6, .7, .3873 STARDC(1,3) = .65, .65, .3937

Event Variables

<u>Variable</u>	Dim	Default_	Unit	Definition
NEIGEN	1	0	 	Number of eigenvector events to be scheduled (maximum 10).
TEIGEN	10	10*0.	days	Array of eigenvector event times (See Page 158).
NPRED	1	0		Number of prediction events to be scheduled (maximum 10)
TPRED	10	10*0.	days	Array of prediction event times
TPRED2	10	10 ± 0.	days	Array of times predicted to
NGUID	1	0	•	Number of guidance events to be scheduled (maximum 20)
TGUID	20	20*0.	days	Array of guidance event execution times
TDELAY	20	20*0.	days	Array of guidance event delay times. Guidance events are scheduled at execution time minus delay time, and covariances are propagated forward to execution time.
TCUT Ø F	20	20≢0.	days	Array of guidance event cutoff times for impulsive maneuvers, set TCUTOF(I) = TGUID(I)
IGPØL	20	2040.		Array of guidance policy centrol flags = 0, no maneuver, print control uncertainties = 1, target to cartesian state, X,Y,Z at time specified by TIMFTA = 2, B.T, B.R targeting = 3, B.T, B.R, time at sphere target- ing = 4, closest approach targeting (radius of closest approach, inclination, time of closest approach) = 5, variable time of arrival (XYZ targeting)
IGREAD	20	20*0.		Array of guidance event read control flags (if non-zero, control weights CØNWT will be read), See Page 163.

<u>Variable</u>	Dim	Default	Unit	Definition
				<pre>= 0, do not read namelist \$GEVENT = 1, read namelist \$GEVENT, and recompute control and target variation matrices (VMAT and SMAT) = 2, read \$GEVENT</pre>
				- 2, read postent
NCØN	1	4		Number of controls for low thrust guidance (must be greater than or equal to number of target variables). Controls are ordered: magnitude cone
				clock
				cutoff time start-up time (or arrival time if IGP#L = 5)
				= 1, magnitude only
				= 2, magnitude and cone
				= 3, magnitude, cone, clock = 4, magnitude, cone, clock, cutoff time
				= 5, use all five controls
CØNWT	5	5*1.		Relative weighting factors for controls defined by NCØN Small number weights out effect
				of control. CØNWT may also be re-defined in namelist \$GEVENT
UMAX	5	5 * 50.	%, deg, day	Maximum allowable (1 σ) control correction as defined by NCØN
TARWT	3	3*1.		Relative weighting factors for target parameters defined by IGPØL
TGSTØP	1	TEND (\$TRAJ)	days	Stop time for integration of variation matrix if sphere or closest approach not reached in B-plane or closest approach targeting
TIMFTA	1	0.	days	Stop time for XYZ targeting (overrides TFINAL and TGSTOP).
SIGDV	4		mixed	Array of standard deviations defining impulsive AV execution errors
SIGDV(1)		.01		Standard deviation of proportion- ality error
SIGDV (2)		2.E-4	km/s	Standard deviation of resolution error

Variable	Dim	Default	Unit	Definition
SIGDV(3)		•065	rad	Standard deviation in ecliptic pointing angle
SIGDV (4)		•065	rad	Standard deviation in out of ecliptic pointing angle
Output Cont	rol			
<u>Variable</u>	Dim	Default_	Unit	Definition
СНЕКРК	10	10*F		Array of logical flags controlling check point options which may be useful in debugging. The following elements of CHEKPR are activated if set equal to .TRUE.:
				 writes on nominal output file (TAPE 6) all information on STM file (TAPE 3) during file generation and all information reads from the STM file. In addition, the results of each transition matrix chaining operation in subroutine STMRDR (See Program Manual) is also printed. Prints every measurement. Prints full covariance, not standard deviations and correlation coefficients, before and after each measurement.
				(4) - Writes on nominal output file (TAPE 6) all information written on GAIN file (TAPE 4) during creation, and all information read from GAIN file for IGAIN = 4 option.
				(5) - Writes on nominal output file (TAPE 6) knowledge and control uncertainties at end of burn interval and transition matrix over burn interval for low thrust guidance, or eigenvalues and eigenvectors of expected AV covariance for impulsive guidance.

<u>Variable</u>	Dim	<u>Default</u>	Unit	Definition
EDIT(50) IPRØP	1	0	days.	 (6) - computer time computation and display (7) - not used (8) - reads from STM file to compute transition matrices needed for guidance rather than calling TRAJ (9) - Prints covariance before and after each propagation (10) - dump core when mission time EDIT(50) dump time (See CHEKPR(10)) Propagation event print control
				= 0, no print = 1, print standard deviations and correlation coefficients of S/C state only = 2, full eigenvector event
JØB LA B	10	B1ank		Hollerith label to be printed with each measurement and event print
MPFREQ	12	12*0		Measurement print frequency control. If MPFREQ(I) = N, the first time the data type corresponding to MPFREQ(I) is scheduled it is printed. Thereafter, that data type will be printed each time its count is divisible by N. The following correspondences between MPFREQ and data type are used. (See also Section 2.3.2). (1) - two-way doppler (code 100X) (2) - three-way doppler (code 11XX) (3) - simultaneous 2-way/3-way doppler (code 12XX) (4) - differenced 2-way/3-way doppler (code 13XX) (5) - two-way range (code 200X) (6) - three-way range (code 21XX) (7) - simultaneous 2-way/3-way range (code 22XX) (8) - differenced 2-way/3-way range (code 23XX) (9) - azimuth-elevation angles (code 30XX and 300X). (10) - star-planet angles (code 4XXX, 40XX and 400X). (11) - apparent planet diameter (code 5000). (12) - astronomical observations (code 600X)
PRNC Ø V	5			Print control for standard deviations and correlation coefficients. (T = TRUE, F = FALSE)

Variable	Dim	<u>Default</u>	Units	Definition
PRNCØV (1)		T 44		Do (T) or do not (F) print state standard deviations and correla- tion coefficients and correlations with all augmented parameters
PRNCØV (2)		T	#	Do (T), do not (F) print solve-for standard deviations and correlation coefficients and correlations with other parameters
PRNCØV (3)		F		Do (T), do not (F) print standard deviations and correlation coefficients for dynamic consider parameters and correlations with other parameters.
PRNCØV (4)		F		Do (T), do not (F) print standard deviations and correlation coefficients for measurement consider parameters and correlations with ignore parameters
PRNCØV (5)		F		Do (T), do not (F) print standard deviations and correlation coefficients for ignore parameters
PRNML	1	F		Do (T), do not (F) print input namelist \$GØDSEP after reading
PRNSTM	5			Print control for state transition matrix partitions. The flagging of any PRNSTM element causes prints, with each state transition matrix print, of the sensitivity of the relevant parameter set to the entire augmented state vector.
PRNSTM(1)		T		Prints sensitivities for S/C state
PRNSTM(2)		P		Prints sensitivities for solve-for parameters
PRNSTM(3)		F		Prints sensitivities for dynamic consider parameters
PRNSTM(4)		F		Prints sensitivities for measurement consider parameters

<u>Variable</u>	Dim	Default	Unit	Definition
PRNSTM(5)		F	* 9	Prints sensitivities for ignore parameters
PUNCHE		5*F		Punch flag for complete knowledge or control standard deviations and correlation coefficients at events = T, causes punching = F, does not Elements of PUNCHE are: (1) - knowledge at propagation event (2) - knowledge at eigenvector event (3) - knowledge at thrust event (4) - knowledge at time TPRED2 for prediction events (5) - control before and after maneuver at each guidance event
SUMARY	1	7		<pre>= T, write SUMMARY file (TAPE 8) = F, do not write SUMMARY file</pre>

2.3.2 Measurement and Propagation Schedule Input

Measurement schedule cards follow directly behind namelist \$GØDSEP.

Each card contains three time control variables in Columns 1-30 in

format 3F10.4 and one measurement code (MESCØD) right justified in

Column 40 (format I10).

Time control variables are START, STØP, DELT

STOP = stop time for current data type;

DELT = time interval increment for scheduling.

For example, if START = 10.5, STOP = 20. DELT = 1.0, the current data



type will be scheduled ten times at 10.5, 11.5, 12.5, ..., 19.5 days. Internal tests modify START if it is less than TCURR, and STØP if it is greater than TFINAL so that no measurements are scheduled outside the requested error analysis interval.

One additional option is available on scheduling. Any scheduling card on which DELT is zero or negative redefines the allowable scheduling interval from (TCURR, TFINAL) to the (START, STOP) interval defined by that card. All succeeding measurements are scheduled in the interval defined by that card until another card with a zero or negative DELT is encountered.

If DELT is greater than zero and no measurement code appears (MESCØD = 0), propagation events will be scheduled. Except for propagation events, all other allowable measurement codes are 4-digits, defined as follows (station and star numbers are defined in STALØC and STARDC, respectively):

2 way doppler (range-rate) from Station n; 100n 11mn 3-way doppler from Stations m and n: 12mn simultaneous 2-way/3-way doppler from Stations m and n; 13mn differenced 2-way/3-way doppler from Stations m and n; 200n 2-way range from Station n; 21mn 3-way range from Stations m and n 22mn simultaneous 2-way/3-way range from Stations m and n: differenced 2-way/3-way range from 23mn

Stations m and n

300n	azimuth and elevation measured from
	Station n;
300m	ezimuth and elevation measured simultaneously
	from Stations m and n;
400n	on board optics, angle measurement between
	ephemeris body and star n, defined by n
	column in STARDC array;
40mn	two simultaneous star-planet angle measurements
	with ephemeris body and Stars m and n
4 kmn	three simultaneous star-planet angle measure-
	ments with ephemeris body and Stars k, m and n;
5000	apparent planet diameter measurement of
	ephemeris body.
600n	right ascension/declination measurement of
	ephemeris body from Station n.

2.3.3 Namelist \$GEVENT

One copy of namelist \$GEVENT must appear after the measurement schedule cards for each guidance event which has its corresponding value of IGREAD greater than zero. Default values are nominal input or computed values prior to reading \$GEVENT.

<u>Variable</u> <u>Di</u>	m Default	Units	Definition
BURNP 4	4*0.	km/s, Kg	Thrust acceleration and mass at beginning and at end of guidance interval (See Page 163).
CØNWT 5 NCØN 1			See namelist \$GØDSEP See namelist \$GØDSEP

<u>Variable</u>	Dim	Default	Units	Definition
SMAT	3x5	15*0.	mixed	Sensitivity matrix of target parameters WRT control parameters (See Page 163).
TARWT	3	-	•	See namelist \$GØDSEP
UMAX	5			See namelist \$GØDSEP
VMAT	3x6	18*0.	mixed	Variation matrix of target parameters WRT state at guidance epoch (See Page 163).

 $(\underline{\mathbb{J}})$



2.4 SIMSEP Input Description

Input to the simulation mode is transmitted to the program through three namelists: \$TRAJ, \$SIMSEP, and \$GUID. As before, the \$TRAJ namelist essentially defines the reference trajectory initial conditions, spacecraft parameters (thrust, mass, electric power, etc.) and other baseline quantities necessary to specify a reference mission. In general, the \$TRAJ inputs for SIMSEP are obtained as results from a precursor TOPSEP analysis where a targeted reference trajectory has been determined.

SIMSEP. Its primary function is to initialize a priori statistical descriptions of those error sources which remain nearly constant during the course of an individual simulation in the basic Monte Carlo cycle. In addition, various parameters which, for example, specify the number of guidance events, the output frequency, the number of Monte Carlo cycles, etc., are also read from SIMSEP.

The second of these namelists unique to SIMSEP is \$GUID. As its name implies, it is responsible for initializing parameters and data used at guidance events. Unlike \$SIMSEP which is read only once for each SIMSEP run, \$GUID is read for each specified guidance event being simulated along the mission. Variables initialized by this namelist include such things as guidance event times, knowledge covariances, guidance law and policy specifications, etc.

Finally, it should be noted that both \$SIMSEP and \$GUID can also contain certain statistical arrays computed in previous SIMSEP analyses.



These arrays are key to SIMSEP's restart capability and provide the means to continue an analysis with many more Monte Carlo cycles in a series of SIMSEP runs. The format for input is, generally, a (nxn) correlation matrix of standard deviations and correlation coefficients. An extra column vector augmented to the right hand side of the (nxn) matrix, thus creating a (nx(n+1)) matrix, serves to store mean values to complete the statistical description for the parameter of interest. Unfortunately, the multitude of options available in SIMSEP make the real numerical format used for input a bit awkward. In particular, the variables, CCØVG, CNTCØV, TARCØV, etc., are actually read as one long column vector with separate columns in the correlation matrix being stored consecutively. This apparent difficulty is somewhat off-set by the fact that these arrays are ordinarily generated as output from a previous SIMSEP run and have automatically been punched in the requisite format.

Another important capability in SIMSEP which relates to the namelists SSIMSEP and SGUID is the multiple run or stacked case feature. In particular, once normal computer processing of a run is completed, the program automatically recycles to read SSIMSEP again if the STRAJ variable, MØDE, has been set to a -3. When this occurs, only changes to SSIMSEP from the previous run need to be input. Likewise, the SGUID namelists are also read in the same sequence as they were for the first run. Guidance event data need not be read anew unless there are changes to a particular data set or if there are more guidance events in the second run. The only

drawback here is that a zero-data namelist, i.e., a #GUID card followed by a #END card, must be input for each event even though there may be no changes. This is also a requirement for the #SIMSEP namelist upon recycling.

Given below are detailed descriptions of the variables, dimensions and default values (where applicable) for both \$SIMSEP and \$GUID. The parameters are divided into appropriate groupings; for \$SIMSEP: run definition, a-priori control and ephemeris errors, spacecraft parameter errors, and accumulated statistics and parameters; for \$GUID: event initialization data, optional initialization data, guidance law and policy, knowledge error, guidance control data, and accumulated statistical data.

Namelist: \$SIMSEP

Run Definition Parameters:

<u>Variable</u>	Dim	Default	Units	Definition
AØK	1	100.		Backup convergence toler- ance for the weak con- vergence test.
CPMAX	1	10000.	sec	Computer processing time limit (See Page 175).
DVMXN	1	0.1	km/sec	Maximum magnitude allowed for a delta-velocity cor-rection.
INREF	1	0		Option flag to indicate whether or not state varia- bles, s/c mass, targets, etc. are to be read as input during the GUID name- list read. = 0, No data input (computed internally). = 1, Input data.

<u>Variable</u>	Dim	Default_	Units	Definition
				If INREF = 1, the variables listed under Optional Guidance Event Initialization Data must be input along with MEND and XEND (See Page 172 and 173).
				If INREF = 0, the optional guidance event data are automatically computed.
IØUT	1			Print output flag which activates printout for every IØUT Monte Carlo cycle.
IPUNCH	1	0		Punch output flag.
TRAN	1	1		 = 0, no punched statistical arrays (covariance matrices and vector means) at the end of the run. = 1, punch. Monte Carlo random number seed to initiate the generation of random number from RANF.
				 ≠ 0, regular Monte Carlo analysis. = 0, forced Monte Carlo sampling of one-sigma for all error sources.
NCYCLE		1		Number of Monte Carlo mis- sion cycles to be executed.
NGUID	1	1		Total number of guidance events, both low thrust and impulsive velocity changes, to be executed on each simulated mission. A maximum of five guidance events is allowed.
PRNML	1			Do (T), do not (F) print input namelist \$SIMSEP after reading.

	Control		

Variables	Dim	Default	Units	Definition
EPHERR	6×6×2	0,,0	km, km/sec	Arrays describing the Cartesian ephemeris errors associated with at most two planets. A 6x6 array is read for each ephemeris planet with standard deviations along the principal diagonal and correlation coefficients off-diagonal. Only the principal diagonal and the lower triangular partition of the array are actually necessary.
GMERR	3		km ³ /sec ²	One sigma uncertainties in the gravitational constants.
GMERR(1)		0.		Solar mass error.
GMERR (2)		0.		First ephemeris planet mass error.
GMERR(3)		0.		Second ephemeris planet mass error.
NEP2	2	0, 0		Array of ephemeris planet number codes to designate the active ephemeris error planets. The code convention is the same as that used in \$TRAJ for the NB array.
PG	6×6	0,,0	km km/sec	Correlation array describing the <u>a priori</u> Cartesian control errors associated with the initial reference state vector. The input format is the same as EPHERR.
ТЕРН	2			Epochs at which ephemeris errors are evaluated.
TEPH(1)		0	days	Julian data or time from launch for the first ephem- eris planet.

Variables	Dim	Default	Units	Description
TEPH(2)		0.	days	Julian date or time from
				launch for the second ephemeris planet.

S/C Parameter Errors:

Variables	Dim	Default	Units	Definition
EXVERR	4			One sigma midcourse velocity correction execution errors.
EXVERR (1)		0.	-	Proportionality error.
EXVERR (2)		0.	degs	In-ecliptic-plane pointing error.
EXVERR (3)		0.	degs .	Out-ecliptic-plane pointing error.
EXVERR (4)		0.	km/sec	Resolution error.
SCERR	5			One sigma SEP s/c errors.
SCERR (1)		0.	kg	Initial s/c mass uncer- tainty.
SCERR (2)		0.	km/sec	Low thrust exhaust velocity uncertainty.
SCERR(3)		0.	kw	Uncertainty in electric power at 1 A.U.
SCERR (4)		0.		Uncertainty in thruster efficiency.
SCERR (5)		0.		Uncertainty in the effective radiation pressure coefficient.
TCERR	6×20	0,,0		One sigma thrust control biases.
TCERR (1, j)		days	j th thrust phase end time.
TCERR (2, j)			j th thrust phase throttling.
TCERR (3, j)		degs	j th thrust phase cone angle.
TCERR (4, j)		degs	j th thrust phase clock angle.
TCERR (5, j)		degs/sec	j th thrust phase cone angle rate.



		m m t		
Variables	Dim	Default	Units	Description
TCERR(6, j)			degs/sec	j th thrust phase clock angle rate.
TVERR	6x3			One sigma time varying thrust control errors (dynamic process noise specifications), corresponding correlation times, and correlation time uncertainties for two simultaneous, independent processes
TVERR(1, 1)		0.		First process, thrust pro- portionality uncertainty (per thruster).
TVERR(1, 2)		1.	days	Correlation time for thrust acceleration.
TVERR(1, 3)		0.	days	Uncertainty in the thrust acceleration correlation time.
TVERR(2, 1)		0.	degs	First process, cone angle uncertainty.
TVERR(2, 2)			days	Correlation time for cone angle.
TVERR(2, 3)		0.	days	Uncertainty in the cone angle correlation time.
TVERR (3, 1)		0.	degs	First process, clock angle uncertainty.
TVE RR (3, 2)		1 •	days	Correlation time for clock angle.
TVERR (3, 3)		0.	days	Uncertainty in the clock angle correlation time.
TVERR (4, 1)		0.		Second process, thrust acceleration uncertainty (per thruster).
TVERR (4, 2)			days	Correlation time for thrust acceleration.

<u>Variables</u>	Dim	Default	Units	Description
TVERR (4, 3)		0.	days	Uncertainty in the thrust acceleration correlation time.
TVERR (5, 1)		0.	degs	Second process, cone angle uncertainty.
TVERR (5, 2)		1.	days	Correlation time for cone angle.
TVERR(5, 3)		0	days	Uncertainty in the cone angle correlation time.
TVERR (6, 1)		0.	degs	Second process, clock angle uncertainty.
TVERR (6, 2)		1.	days	Correlation time for clock angle.
TVERR (6, 3)		0.	days	Uncertainty in the clock angle correlation time.

Accumulated Statistics and Parameters:

<u>Variable</u>	Dim	Default	Units	Definition
ADVT	2			Accumulated delta-velocity magnitude statistics for all impulsive velocity corrections along a mission.
ADVT (1)		0.	km/sec	One-sigma delta-velocity magnitude.
ADVT (2)		0.	km/sec	Mean delta-velocity magni- tude.
ENDCÓV	6×7	0.,,,0.	km km/sec	S/C control error correlation array computed at the trajectory time TEND. This array is input as a (6x6) matrix of standard deviations and correlation coefficients. Only the principal diagonal and the lower triangular submatrix are necessary. The 7th column of this array contains the means.

<u>Variables</u>	Dim	Default_	Units	Definition
AMASS				Accumulated S/C mass statistics at the final time.
AMASS(1)		0.	kg	One-sigma s/c mass.
AMASS(2)		0.	kg	Mean s/c mass.
MEND	1	0.	kg	Final s/c mass on the reference trajectory at time TEND. This variable is required only if INREF = 1 and is used in computing AMASS statistics.
MC		0.		Number of Monte Carlo cycles executed in a previous SIMSEP run in which statistical variables ADVT, AMASS, ENDCOV, and ATHCOV are computed. MC is used to restart accumulated statistics for the current run.
ΑΤΗCΦV	420	Û,,O.		Accumulated statistics on the active thrust controls changed at scheduled low thrust guidance events. A maximum of twenty active thrust controls are allowed. This array is input as a (nxn) matrix of standard deviations and correlation coefficients, where n is the total number of low thrust controls. As before, only the principal diagonal and lower triangular submatrix need to be input. The (n+1)th column vector contains the means.
XEND	6	0,,0.	km, km/sec	Final reference trajectory state vector at the trajectory time TEND. This vector is required input only if INREF = 1 and is used in computing the ENDCOV covariance matrix.

Variable	Dim	Default	<u>Units</u>	Definitio	n
KATHC	1	0		Dimension of th	e ATHCØV matrix.

S/C Parameters for Midcourse Velocity Corrections:

()

<u>Variable</u>	Dim	Default	Units	Definition
SPF IMP	1	265.	sec	Specific impulse for chemical propulsion system.
DVMDØT	1	•05	kg/sec	Mass flow rate for chemical propulsion system.

Namelist: #GUID

Guidance Event Initialization Data:

Variable_	Dim	Default	Units	Definition
KTER		0.		Option flag to indicate whether or not target errors are to be evaluated after the current guidance event. If KTER = 1, a trajectory is integrated from the point of the guidance event to the target.
TGUID	1	0.	days	Epoch of the current guid- ance event specified as either a Julian date or the interval of days since launch.
TTARG	1	0.	days	Designated epoch of arrival at the target specified either as a Julian date or as the interval of days since launch.

Optional Guidance Event Initialization Data: These variables are required input only if INREF = 1 (See #SIMSEP).

Variable _	Dim	Defau1t	Units	<u>Definition</u>
MGREF		0.	kg	S/C reference mass at the current guidance event.
MTREF	1	0.	kg	S/C reference mass at the designated target time.
S	36	0,,0.	Mixed	Sensitivity or guidance matrix which has been com- puted in a previous analysis.
				For linear guidance, S is input as a guidance matrix.
				For nonlinear guidance, S
				is input as a targeting sen- sitivity matrix.

<u>Variable</u>	Dim	Default	Units	Definition
TARGET	6	0,,0.	Mixed	Array of reference target values evaluated at the designated target time.
XGREF	6	0,,0.	km, km/sec	Reference trajectory state vector at the current guid-ance event.
XTREF	6	0,,0.	km, km/sec	Reference trajectory state vector at the designated target time.
PRNML	1			Do (T), do not (F) print namelist \$GUID after reading.
Guidance L	aw and Po			
<u>Variable</u>	<u>Dim</u>	Default	Units	Definition
IGUID				Guidance law flag. = -2, nonlinear, impulsive guidance. = -1, linear, impulsive guidance. = 0, zero-action guidance event with no maneuver performed but control statistics computed. = +1, linear, low thrust guidance event. = +2, nonlinear, low thrust guidance event.
ITARGT	25	0,,0.		Target policy vector; a non- zero value of any component indicates that the associated target parameter will be in- cluded as a target variable. All targets are evaluated at the designated target time.
ITARGT (1)			km	X-component of the S/C state relative to the target body.
ITARGT(2)			km	Y-component of the S/C state relative to the target body.

<u>Variable</u>	Dim	Default	Units	Definition
ITARGT(3)			km	Z-component of the S/C state relative to the target body.
ITARGT (4)			km	<u> r </u> - radial distance from the target body.
ITARGT(5)			km/sec	$V_{\rm x}$ - component of the S/C state relative to the target body.
ITARGT (6)			km/sec	V_y - component of the S/C state relative to the target body.
ITARGT(7)			km/sec	$V_{\rm Z}$ - component of the S/C state relative to the target body.
ITARGT(8)			km/sec	$ \underline{v} $ - velocity magnitude relative to the target body.
ITARGT(9)			km/sec	v _{hp} - hyperbolic excess velocity.
ITARGT(10)			km	r _{ca} - radius of closest approach.
ITARGT (11)			km	B•T coordinate in the impact plane.
ITARGT (12)			km	B•R coordinate in the impact plane.
ITARGT (13)			days	TSOI, conically interpolated time of encountering the target sphere of influence relative to TLNCH.
ITARGT (14)			days	TRCA, conically interpolated time of arrival at closest approach relative to TLNCH.
ITARGT (15)			km	a, semi-major axis of the osculating conic relative to the target body.
ITARGT(16)				e, eccentricity of the osculating conic relative to the target body.

<u>Variable</u>	Dim	<u>Default</u>	Units	Definition
ITARGT (17)			deg	i, inclination of the osculating conic relative to the target body.
ITARGT (18)			deg	\$\int_{\text{0}}\$, longitude of ascending node of the osculating conic relative to the target body.
ITARGT (19)			deg	ω, argument of periapsis of the osculating conic relative to the target body.
ITARGT (20)			deg	M, mean anomaly of the osculating conic relative to the target body.
ITARGT (21)			deg	, true anomaly of the osculating conic relative to the target body.
ITARGT (22)-	(25)		• • • • • • • • • • • • • • • • • • •	Not used.

<u>Variable</u>	Dim	Default	Units	Definition
NTP	1	0		Code flag defining the target planet for the current guidance event. (See Page 7).
tart ø l	6	0,,0.	Mixed	Target tolerance array. When the miss for each target variable is less than or equal to the corresponding TARTOL value, the strong convergence criterion is satisfied.

Knowledge Error Data:

<u>Variable</u>	Dim	Default Units	Definition
CXS	6x11	0,,0.	Cross correlation array of solve-for parameters which have been augmented to the state vector.
KDIMEN	1	6	Dimension of the augmented state vector.
			<pre>= 6, s/c state vector only. = 7, s/c state vector and one mass (sun or a planet). = 8, s/c state vector and two masses (sun and a planet). = 9, s/c state vector and thrust biases (magnitude, cone and clock). = 10, s/c state vector, thrust biases, and one mass. = 11, s/c state vector, thrust biases, and two masses.</pre>

Variable	Dim	Default_	Units	Definition
				= 12, s/c state vector and ephemeris planet errors (X,Y,Z,X,Y,Z).
				= 13, s/c state vector, ephemeris errors, and one mass.
				= 14, s/c state vector, ephemeris errors, and
				two masses. = 15, s/c state vector, ephemeris errors, and
				thrust biases. = 16, s/c state vector, ephemeris errors, thrust biases, and one mass.
				= 17, s/c state vector, ephemeris errors, thrust biases and two masses.
P	6×6	0,,0.	km, km/sec	Correlation array describing the Cartesian knowledge errors associated with the actual trajectory state at the guidance event. The input format is the same as EPHERR (See Page 41).
PS	11×11	0,,0.	Mixed	Correlation array of solve- for parameters which have been augmented to the s/c state vector. The input format is the same as EPHER (See Page 41).
NEP	1	0		Planet code (See Page 7) of ephemeris body, used only i ephemeris knowledge errors are present.
Guidance E	vent Cont	rol Parameter		는 이 보고 등 이 이번 사는 이 마시 이 없는 말을 하기 때로 되었다. 그 아이는 이 전에 가는 이 모든 말을 하는 이 이번 모든 말을 하는 하는 모든 일을 하게 하는 이는 것이라는 말이 하는데 보고 있다.
<u>Variable</u>	Dim	Default	Unit	Definition
H	10×20	0,,0.		Array of flags used to iden- tify the active thrust con- trol variables to be used

<u>Variable</u>	Dim	Default	Units	Definition
				during the current low thrust guidance event. The entries in H have a one to one correspondence to elements in the THRUST array. (See Page 10). Comment: Only the first six non-zero entries will be used since a maximum of six controls at any given guidance event is allowed (See Page 170).
H(1,j)				Not used.
H(2,j)			days	Active thrust control is the jth thrust phase end time (THRUST(2, j)).
H(3,j)				Active thrust control is the j thrust phase throttling (THRUST(3, j)).
H(4,j)			deg	Active thrust control is the j thrust phase cone angle (THRUST(4, j)).
H(5,j)			deg	Active thrust control is the jt thrust phase clock angle (THRUST(5, j)).
н(6,ј)			deg/sec	Active thrust control is the jth thrust phase cone angle rate (THRUST(6, j)).
H(7,j)			deg/sec	Active thrust control is the j thrust phase clock angle rate (THRUST(7, j)).
н(8,j)-(1	0 , j)			Not used.
NMAX	1			Maximum number of non-linear guidance iterations allowed.
UWATE	6	1.,,1.		Array of control variable weight that may be used to arbitrarily increase the sensitivity of a given control relative to other controls.

Accumulated Guidance Event Statistical Data:

<u>Variable</u>	Di m	<u>Default</u>	Units	Definition
CCØVG	6x7	0,,0.	km, km/sec	S/C state vector control error array computed at the current guidance event. This array is read as a (6x6) matrix of standard deviations and correlation coefficients. Only the principal diagonal and the lower triangular submatrix are necessary. The 7 th column of this array contains the mean values.
CCØVT	6x1	0,,0.	km, km/sec	S/C state vector control error array computed at the designated target time. This array is read as a (6x6) matrix of standard deviations, correlation coefficients, and means in the same format as CCØVG. Computed whenever KTER=1.
CNTCØV	6×7	0,,0.	Mixed	Correlation array for the active thrust control variables used at this guidance event. This array is input as an (nxn) matrix of standard deviations and correlation coefficients where n is the number of low thrust controls. Only the principal diagonal and lower triangular partition need to be input. The (n+1) th column vector contains the control means.
DVMAG	2			Delta-velocity magnitude statistics.

<u>Variable</u>	<u>Dim</u>	Default_	Units	Definition
DVMAG(1)			km/sec	One-sigma delta-velocity magnitude.
DVMAG(2)		0.	km/sec	Mean delta-velocity magni- tude.
DVMCØV	3×4	0,,0.	km/sec	Delta-velocity vector correlation array. Input format is the same as CCØVG (See Page 51).
GMSC Ø ∇	2			S/C mass statistics eval- uated at the current guid- ance event.
GMSCØV(1)		0.	kg	One-sigma S/C mass.
GMSCØV(2)		0.	kg	Mean S/C mass.
MSAMP		0.		Number of Monte Carlo cycles executed in a previous SIMSEP run in which statistics on CCØVG, CCØVT, CNTCØV, DVMAG, DVMCØV, GMSCØV, TARCØV, and TMSCØV were computed. MSAMP is used to re-initialize the accumulation of statisicts for the current run.
TARCÓV	42	0,,0.	Mixed	Correlation array describing target error statistics. The format here is the same as CNTCOV (See Page 51) except the dimension of the input matrix is determined by the no. of target variables. This array is input whenever KTER = 1, or at the last guidance event.
TMSCØV	2			S/C mass statistics eval- ulated at the designated target time. Computed whenever KTER = 1.
TMSCØV(1)			kg	One-sigma s/c mass
TMSCØV(2)			kg	Mean s/c mass
		医动脉形成形 使基础 法人		化油油医环烷酸 海海山 化二羟基酚 化放射性的 经净的复数证据 海绵的战场

2.5 REFSEP Input Description

Input to the detailed trajectory print mode of MAPSEP is made through the namelist \$TRAJ and formatted cards. In addition to the baseline trajectory parameters, \$TRAJ contains several variables used only in REFSEP (see page 12-A). Of particular importance is the variable KARDS which must be set equal to the number of formatted cards following the namelist. The other REFSEP variables in \$TRAJ are used only when S/C tracking information is desired. The print schedule cards follow directly behind \$TRAJ and contain such information as start and stop times and time intervals between specified blocks of trajectory output. The format for these cards is exactly the same as that for measurement schedule cards characteristic of the GODSEP mode (see page 34). A brief summary of the format and an example follow.

Each schedule card contains three time control variables in Columns 1-30 (format 3F10.4) and one print code right justified in Columns 37-40 (format I10). The time control variables are START, STØP, and DELT where

START = start time, referenced to TLNCH, for scheduling current print blocks;

STOP = stop time for current print blocks;

DELT = time interval increment for scheduling.

Internal tests modify START if it is less than TSTART, and STOP if it is greater than TEND. TSTART and TEND are input variables in \$TRAJ which define the initial and final trajectory times respectively. An additional

option of specifying DELT=0.aids the user in redefining the range of times which are allowed on subsequent cards. The START and STØP times on a DELT=0. card designate the new scheduling interval for all succeeding cards until another DELT=0. card is encountered. The redefined interval supersedes the nominal (TSTART, TEND) interval.

The print code (klmn) is a four digit number designating the print blocks to be output at the appropriate times. Each digit represents a different type of print block and the value of the digit determines the level of detail to be printed (i.e. the largest value of the specified digit includes the print suggested by the smaller non-zero values). The blocks of print are selected as follows:

n = 0 to 3, Nominal Trajectory Print

kℓm0 current time and the Julian date

kℓm1 body relative S/C states and S/C accelerations

kℓm2 individual perturbing accelerations and
planetary ephermerides

kℓm3 integration data, Encke formulation

m = 0 to 2, Primary Body Data
kl0n no primary body data
kl1n osculating conic data
kl2n relevant unit vectors

l = 0 to 1, Target Data
no target data

k0mn

klmn B-plane, closest approach parameters, and orbital elements relative to the target body.

k = 0 to 1, Tracking Data

0.lmn

no tracking data

 $1 I_{mn}$

S/C in various topocentric coordinate systems;

S/C rise and set times relative to Earth based tracking stations; target body rise and set times relative to one astronomical observatory.

For the special case when the print code is set to (0000) or when the code is not input on the schedule card at all, the default print code of (0001) is assumed.

Figure 2-5 is an example of one possible schedule card. If this card is encountered by REFSEP the print code 1123 will be scheduled at 100.5, 110.5, 120.5, ..., 190.5 days or a total of ten times.

Note that the stop time of 200. days is not a scheduled print time.

	100.5	200.	10.	1123
Columns	1 to 5	11 to 14	21 to 23	37 - 40

Figure 2.5 REFSEP Detailed Print Schedule Card

The code 1123 designates all possible print blocks as previously described to be printed at the ten time points. The fact that tracking data is to be computed necessitates the inclusion of the Earth code in the NB array found in \$TRAJ. Control phase change print and primary body change print are not included in this code. To obtain this output the IPRINT flag in \$TRAJ must also be set to the appropriate value. However, the termination print at the final time is always output in a REFSEP run.



3.0 OUTPUT AND SAMPLE CASES

The form, type and amount of MAPSEP output depends upon the operating mode and whatever options and submodes have been exercised. Output can be very extensive or it can be quite simple and in summary form. Because of MAPSEP complexity, a general rule of thumb is to output as much as possible unless the user has a very specific purpose in mind.

3.1 Card and Tape Output

\$TRAJ namelist on disc (the STM file) for subsequent stacked cases. By transferring the results on tape (or permanent file), a permanent record can be obtained to be used for future runs. However, because of the relatively small amount of card input for \$TRAJ, use of permanent STM file is not recommended except for GODSEP where a great deal of additional data is stored.

Available card and tape output is shown in Table 3-1 with the input flag that triggers the output. Certain output in the form of punched cards are automatically output if specific options are exercised. Obviously, more than setting an input flag is required for meaningful output, and the user is referred to Chapter 4 for recommended operating procedures.

3.2 Printout

There are two blocks of printout which are common to all modes:

initialization and TRAJ print. Initialization print is displayed on the

first page of every run and contains the reference trajectory data, includ
ing start and end times, initial state vector, spacecraft characteristics,

thrust control parameters, etc.



	Input Control	Output	
Mode	Flag	Format	Data
TOPSEP	ISTMF	STM File	\$TRAJ namelist
GODSEP	ISTMF	STM File	\$TRAJ namelist; state transition matrices and trajectory data at specified trajectory times.
	GAINCR	GAIN File	\$GDSEP namelist; event schedule; filter gains at measurement events
	SUMMARY	SUMMARY File	Navigation summary
	PUNCHE	Cards	Knowledge (P) and control (PG) covariances at selected event types.
	IGREAD=0 (and NGUID≠0)	Cards	Computed variation (VARMAT) and sensitivity (S) matrices for guidance events.
SIMSEP	ISTMF	STM File	\$TRAJ namelist
	IPUNCH	Cards	Cumulative statistics for each maneuver (CCØVG, CNTCØV, DVMCØV, GMSCØV, CCØVT, TARCØV, and TMSCØV) and for the total mission (ATHCØV, ADVT, ENDCØV, and AMASS).
	IPUNCH (and INREF=0)	Cards	Reference trajectory (XEND and MEND) and guidance event data (XGREF, MGREF, S, XTREF, MTREF and TARGET).

Table 3-1 Card and Tape Output

TRAJ print is output when the trajectory propagation routine is called (and the related print flag is triggered) by the mode in operation. TRAJ print is used either by itself or in association with mode peculiar print

and displays instantaneous trajectory information at a specified time.

Trajectory data includes current mission time, spacecraft mass and thruster power, state and acceleration vectors, etc.

The best illustration of mode related output is by example. Hence, the following sections contain sample printout from TOPSEP, GODSEP and SIMSEP, including all necessary input to make the runs. The mission used for all three sample cases is an SEP slow flyby of the comet Encke in 1981.

3.2.1 TOPSEP

The TOPSEP sample case illustrates the STM targeting procedure for an Encke flyby mission. This run represents one iteration in the later stages of the targeting process in which targeting error only is to be minimized. Convergence has not been attained at the conclusion of this iteration; however, extending the maximum iteration restriction to three (NMAX in \$TØPSEP) does allow convergence to occur.

The first page of output is a listing of the \$TRAJ namelist input which contains reference trajectory data and MØDE = 1 specifying the TOPSEP mode. All \$TRAJ variables which are not listed on this page assume the default values as specified in Section 2.1 (Page 4). Together with the default parameters these variables specify the details of the Encke flyby mission. The initial state is provided in geocentric ecliptic coordinates (ICABRD = 3, NLP = 3) for the launch date of March 24, 1979, (TLNCH = 2443956.65). The trajectory control policy (THRUST) consists of nine segments with a 64 day initial coast followed by 523 days of continuous thrust. Thrust shutdown occurs at 587 days after launch and the trajectory termination time, TEND, occurs at 593.4987 days. Note that termination or final time is mandatory under the STM targeting procedure; thus,

the trajectory termination flag, ISTOP, must maintain its default value (ISTOP = 1). A summary of the above variables and other pertinent \$TRAJ parameters may be found on the second page of the sample case output.

The remaining output pages refer to the TOPSEP mode exclusively. The \$TOPSEP namelist on the third page contains control and target information. The TOPSEP submode flag, IMODE, designates the targeting and optimization option; however, the selection of the STM method of targeting (IASTM = 1) precludes the optimization process. The TOPSEP initialization summary follows on the next page and is self-explanatory. Note that X, Y, Z targeting relative to Encke has been designated with desired target values equal to zero and acceptable target tolerances equal to fifty kilometers. Hence, the trajectory is considered targeted and the iteration process converged when X, Y, and Z each fall below fifty kilometers at the final time. To accomplish this task, four controls have been selected -- the cone and clock angle of the sixth thrust phase and the cone and clock angle of the eighth thrust phase. Corrections to these controls shape the low thrust trajectory from 525 days to the final time; the 525 day trajectory arc from launch remains fixed.

The first operation that TOPSEP performs after initialization is propagation of the reference initial conditions over the fixed 525 day arc. Since the initial state reflects the Earth relative injection process, the parking orbit transfer data and injection data are displayed (analytic discussion in Reference 1, Page 129). Beginning at 525 days, the ϕ and θ partitions of the augmented state transition matrix

(Reference 1, Page 140) are integrated to the final time and printed. The termination print block follows immediately and displays the values of all possible target variables. Included in this list are the values of the X, Y, and Z targets which result in a position error of 82939 kilometers and an initial target error index of 2.75×10^6 .

Following the zeroth iterate and each subsequent iteration is the iteration summary. The parameters which are listed in the summary are defined below and are discussed in Reference 1, Section 5.3.

F = performance index (mass)

DP2 = optimization scaling

EMAG = quadratic target error

GAMA = control step scale factor

E = target error (desired - actual)

DPSI = desired amount of target error to be removed

G = performance gradient WRT control parameters

DU1 = optimization control correction

DU2 = targeting control correction

DU = control correction for this iteration

C*DU = scaled control correction (GAMA*DU)

UOLD = nominal or previous control parameters

UNEW = control parameters after this iteration

P1 = net cost (Analytic Manual, Page 51) for nominal and each trial step

P2 = EMAG for nominal and each trial step

 $P1P2 = \emptyset SCALE * P1 + P2$

SENSITIVITY MATRIX (printed twice) = change in target parameters WRT control parameters.

Once the sensitivity matrix is computed the control correction (DU) is formulated which reduces the target error. Subsequently, four trial

trajectories are integrated each of which incorporates a scaled control correction in the thrust profile. The scale (GAMA) is computed using a polynomial minimization technique and is summarized after the trial trajectory print. Notice that a scale on the control correction for a fifth trial trajectory has been estimated; however, the trajectory is never integrated since the scale is within one percent of that for the fourth trial trajectory (GTRIAL(3) = .01). The best trial trajectory is, of course, the one which minimizes the error index. Clearly the best trial trajectory is number four which has reduced the error index to 4.03×10^2 . The position error for this trial trajectory is 1004 kilometers, a reduction of 98% from the initial trajectory error. The new control vector is printed in the summary for the first iteration. It is formulated as follows:

$$\underline{\mathbf{u}}_{\text{new}} = \underline{\mathbf{u}}_{\text{old}} + \mathbf{y} \cdot \mathbf{\Delta} \underline{\mathbf{u}}$$

or

$$\begin{bmatrix} 129.691 \\ 272.200 \\ 157.017 \\ 77.844 \end{bmatrix} = \begin{bmatrix} 130.432 \\ 272.530 \\ 165.000 \\ 77.590 \end{bmatrix} + \begin{bmatrix} -.741 \\ -.330 \\ -7.983 \\ .254 \end{bmatrix}$$

where the units of $\underline{\mathbf{u}}$ are in degrees. In terms of the printout in the iteration summary

$$UNEW = UØLD + C*DU$$

At the conclusion of each run the best trajectory is integrated once again and printed according to the format requested (MPRINT(1) = 1). For

this Encke flyby mission the fixed 525 day arc is not duplicated since it appears in the very first trajectory printout of the zeroth iterate. The trajectory segment which changes from iteration to iteration is printed, however. This arc includes the sixth, seventh, eighth, and ninth thrust phases. If the iteration process were to continue this trajectory would become the reference for the second iteration.

***************************************		AJECTORY INITIA		*********		******	*****
			••••			************	44.5.6
INTITAL EFECH (REFERENCE DA							
JULIAH BATE 244					<u></u>		
CALFACAP LATE 19	79 PFR 24 3 PR 4	2 PIN 52.9920 S	ECS .				
TRAJECTORY STAFT EFOCH	0.0000000COC CAYS AFTE	R THE INITIAL E	POCH				
JULIAN CATE 244						·	
CALERTAD CATE 19	79 MAR 24 3 HR 4	2 PIN 52.5520 S	505			•	
TRALECTORY FND EFOCH							
	4550.1534799933				··		
CALENCAP DATE 19	ED NOV F 15 HR 4	1 PIN6714 S	FCS				
			•				
INITIAL STATE VECTOR AT	G. COCCELOCE DAYS AFT	ER THE FFFERENC	E EPOCH-	eren i remanistrativa i la manistrativa.			
	y	Ψ.		2		MAGNITUDE	•
FCSITION592	11644500C69E+04	.21671469800080	E+04	.1817404720000		· 65619329365342	F is
·	567730006CCE+01	. 05261670369006	E+01	·7331233756600	BE+61	-1321f8853f786A	E+82
SFES PASS	1986.0000000000				- - - -		
EXPEUST VELOCITY	29.4180000000					•	
SEES PASS EXHAUST VELOCITY	21.650000000	KH					
THRUSTER EFFICIENCY	-6400000000						
THRUSTER FEFTICIENCY RAGIATION FRESSURE COEFFICIENT	-1.0000000000						
عبك أناك أعدا الشفر البلسان الممالك فالكافيف							
LIST OF GREVITATING BODIES							
SLN							
FJETH						المعاورة المساوية	
• ELEVE							
TAPCET PLANET, IS ENTRE	•						
INTEGRATION STAR FACTOR	•826						
REFERENCE THRUST CONTROLS							
		THENCY OF SEE		*****			
FRASE FUR TIPE	TRUST PHASE THRUST PHASE THROTTLING CONF ANGLE	CLOCK ANGLE	THRUST FFASE				
AUFER (DAY)				CLCCK PATE			
		(LEE)		(LEL/SFC)			
1 64.000.10	1 000000	0.00000	000270.0	0.000000	0.00000		
2 140. 00310	1.020 CCC	274.000.000	0.00000	0.00000	0.000080	•	
4 479.030325	1.030003 85.334000	252.01.0000-	U. G.		0.000666-		
4 4/9.010325			0.00000		0.000000		
5 525.00030	1.000000 120.501000		0.00000	0.00000	0.000000		
	- 1.355000 - 120.432000						
			0.636000	0.000000	0.010100		
8 567.003630	1.Gr0C00 165.C000CC		0.00000	0.000000			
	C.0000CC	E * 00 E C 8 O	C. 000000-	0.0000C			
BOOV PARAPETERS AND ORBITAL ELL	acter neverness bree we re						
FLAFT REGIUS	SECONDERENCE OF PARTY AND	OK ENGRE HI DO	CTAM DAISONNE	444260.0000000	10443		
PLANET SOLFOE	4	4					····
FLANFT GOLUTTATIONAL CONST	PATE COUNTY OF THE PROPERTY OF THE	###!\<\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\					
market terrent	CALCACANA MARK F. C			*			
ECCF, TRICITY .8470000	190CSE+9C C.	1.0/JC					
INCUINTIES -1195 LOC	COOCCE+O2 CEG C.	CEGVIC					
ASCENCING NODE 3242FGG		CEG\JC-					
	COCCGE+03 DEG C.	066/10			* *		
MEAN ANGMALY O.	CEG C.	CEG/JC					

and the second of the second second second second and a second of the second of the second second of the second of

THE COUNTY OF THE PROPERTY OF

and the second s	The second secon			
\$TUPSEP				
IASTH = 1.				
MPHINT = -1.0.0.0.	والمارا والمراجع والمراجع والمراجع والمستعلق والمراجع والمستعلق والمراجع والمستعلق والمستعلي والمستعلق والمستعلق والمستعلق والمستعلق والمستعلق والمستعلق وال			
140UE = 2.		•		
NMAA = 1.				
STOL=1.E-4.				
IMATE # 1.				
JealE = 0.				ده ماد داده داده و داده
n(4+6)=2+1., h(4+8)=2+1., ULIMIT(1+1) = 125.,267.,155.,/5.,				
ULIMIT(1.2) = 135.,280.,165.,70.,				
UWATE=1,,2,,5,,5,,5,,				
TANTOL (1) =3.50.,				
TANGET=3-0				•
\$				
The same and the s				
in the second of the contract				munication in the second secon
				•
事件 精 经工作 医三氯苯酚 医多角菌科			and the second second	
				-
the case of the state management theorem an experience theretaes the contract to the second				
	69			المناسخية والمنش البياني والمارا
المناها الرباب أودؤ معوه لينسب يتسادره بموييد تهرا وبالأبال الرابان		- The second section of		and the second second
	. こち			
	20 14 .		يسد سدين بيسيسيرين	
وفيرانج بأرابعه بجوشتها وعباغة بودين والرازيل إيهاب	22			
	OF POOR QUALTY		and the same of th	مستناه مستناه فيمسا سيمين بمساء والماسية والانتها
The same section is a section of the same sect	70 -			
	22		المحافظ فرانها السرامين	The same of the sa
plants of the same	492			
t da Santa de Roum <u>e e</u> de l <u>a la c</u>	R	فيع والمستخدم فالمعادلة والمعاد الماء الميعاد الارادانيين	خالف در دها القالم الكليسيس	
and the second s	K W			
				*
The first of the f			-	
and the special property with the case of the special property and the special				
and the spiritual strategy or the state of t				
Construction of the constr				
Company and the company and th	<u> </u>			
Applications of the property o				<u> </u>
		and the second s	Communication of the Communica	
			inganian (kanamata) kingkan awa kana wata masa ka	

	SUPPOCE CESTON	ATTCN : GENER	PATE TARGETER	AND/OR CPTIMIZE	FC TEAUFCTORY		The state of the s		
	Carroller of the Control of the Control		The second contracts and and the second		- ir-uction!			-	
METHOD		FCTED GRALIENT							
	CES RCSEN.J.	B. THE GRADIE	NT FECUECTION	PETHOD FOR NOT MARCH, 1960.					
TARGETI	RG-PRC-CFTIRIZ	ATTCH-CATA-							
NG. CF 1	TERGETS 3	TUF =	1G(00CE+C	1 GTR	If(1) = -10	1000E+00			÷
NO. OF C	ERATIONS 1		1000C0F+C1	1 GTR	IAL(2)50(3000E+01			
PERAY -	4/85484							•	y
7 61 · · · •		SICL	1EC000E-C	3GTR	IAL (5)	G00(E+01	للسفاء بمبعد ودائدتها أورا للتدايدية أأسم دانيها أدار ومعيد		·
						•			
TAPGET - F	FARILETEES		ه به السود الطبيعة الدينة سيستيك	egi an in areas in a series in		randomente e a primer militaria mandiana, più disconsidera, più disconsidera del constituente del constituente	· · · · · · · · · · · · · · · · · · ·		
	EET V		TOLEFAN	CF					
		erana and contact of access				والحنوف الماسكان			
			-Secondance	1111E+12					
1 X 2 Y	c.		.50000000000	0000E+02					
1 X	٠.		.5000000000 .5000000000 .500000000	0000E+02 0000E+02 0000E+C2	and their age. See of a lettership.				
1 X 2 Y -8-2	(• (• (• (• (• (• (• (• (• (•								
1 X 2 Y -8-2	(• (• (• (• (• (• (• (• (• (•			0000E+02 0000E+02 000GE+C2	E- JSEO IN SIM-	(ARGETING)			
1 X 2 Y -8-2 Theust C	CCAIFCL CFSIGN THFLST FHASE	ATICAS (NCA-ZE	RG VALUF FLAGS	S CONTECL TO BI	THEUST PHASE	THRUST FHASE			
1 X 2 Y -8-2 THEUST C THEUST PHASE	CCATFOL EFSIGN THELST FHASE EARL TIME	ATICAS (NCA-ZE	THRUST PHASE	S CONTECL TO BI THRUST FLASE CLOCK ANGLE	THRUST PHASE	THRUST FFASE			
1 X 2 Y -8-2 THEUST C THEUST PHASE	CCAIFCL CFSIGN THFLST FHASE	ATICAS (NCA-ZE	RG VALUF FLAGS	S CONTECL TO BI	THEUST PHASE	THRUST FHASE			
1 X 2 Y -8-2 THEUST (THEUST PHASE NUMBER	CCNIFCL CFSIGN THFLST FHASS END TIME (CAYS) C.03CG9	ATICKS (NCK-ZE THEOST FLASE THEOTILING 0.00000	THREST PHASE GCNF ANGLE - (CEG) 0.CC000	S CONTECL TO BE THRUST FHASE CLOCK ANGLE (DEG) 0.00000	THFUST FHASE CONE RATE (LEG/SEC) C.00000 C.00000	THRUST FFASE CLCCK RATE (CEG/SEC) 0.0000C			
THEUST C	CCATFOL EFSIGN THFLST FHASE END TIME CCATSO C.COCCO C.COCCO C.COCCO	ATICAS (NCA-ZE THEUST FLASE THEOTILIAG 0.00000 0.000000 0.00000	THREST PHASE GCNF ANGLE - (CEG) 0.CC000 0.GC0001 0.CC0000	S CONTECL TO BE THRUST FHASE CLCCK ANGLE 10EG) 0.CC0000	THRUST PHASE CONF FATE (LFG/SFC) C.00600 C.00000	THRUST FHASE CLCCK RATE CLCCK CATE CLCG/SEC) 0.0000C 0.0000C			
1 X 2 Y -8-2 THEUST (THEUST PHASE NUMBER	C. C	#TICKS (NCK-ZE THEUST FHASE THEOTILING 0.00000 0.00000 C.00000 C.00000	THREST PHASE CONF ANGLE - (CEG) 0.0000 0.0000 0.0000	S CONTECL TO BI THRUST FHASE CLOCK ANGLE 10EG) 0.00000 0.000000000000000000000000000	THFUST FHASE	THRUST FFASE CLCCK RATE (TEG/SEC) 0.0000 0.00000 0.00000 0.00000			
THEUST C	CCATFOL EFSIGN THFLST FHASE END TIME CCATSO C.COCCO C.COCCO C.COCCO	ATICAS (NCA-ZE THEUST FLASE THEOTILIAG 0.00000 0.000000 0.00000	THREST PHASE GCNF ANGLE - (CEG) 0.CC000 0.GC0001 0.CC0000	S CONTECL TO BE THRUST FHASE CLCCK ANGLE 10EG) 0.CC0000	THRUST PHASE CONF FATE (LFG/SFC) C.00600 C.00000	THRUST FHASE CLCCK RATE CLCCK CATE CLCG/SEC) 0.0000C 0.0000C			
1 X 2 Y 2 Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z Z	C. C	ATICAS (NCA-ZE THEUST PHASE THEOTILIAG 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000	THREST PHRSE GCNF ANGLE (CEG) 0.0000 0.0000 0.0000 0.0000 1.00000 0.0000	S CONTECL TO BI THRUST FHASE CLCCK ANGLE (DEG) 0.CC0GC 0.CC0GC 0.CCCGC 0.CC0GC 1.CGOGC	THFUST FHASE	THRUST FFASE - GLCCK RATE - (CEC/SEC) 0.0000C - 0.0000C 0.0000C 0.0000C			
THEUST C	C. C	#TICKS (NCK-ZE THEOTILING 0.00000 0.00000 5.00000 0.00000 0.00000 0.00000 0.00000 0.00000	THREST PHASE GCNF ANGLE - (CEG) 0.CC000 0.CC000 0.CC000 0.CC000 1.C0000 1.C0000	S CONTECL TO BE THRUST FHASE "CLCCK ANGLE" 10EG) 0.00000 0.00000 0.00000 0.00000 1.00000 0.000000 0.00000000	THFUST FHASE	THRUST FFASE - GLCCK RATE - (CEG/SEC) 0.00000 - 0.00000 0.00000 0.00000 0.00000 0.00000			
THEUST C	C. C	ATICAS (NCA-ZE THEUST PHASE THEOTILIAG 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000	THREST PHRSE GCNF ANGLE (CEG) 0.0000 0.0000 0.0000 0.0000 1.00000 0.0000	S CONTECL TO BI THRUST FHASE CLCCK ANGLE (DEG) 0.CC0GC 0.CC0GC 0.CCCGC 0.CC0GC 1.CGOGC	THFUST FHASE	THRUST FFASE GLCCK RATE (CEG/SEC) 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000			
THEUST OF THEUST PHASE NUPREF	C. C	#TICKS (NCK-ZE THEOTILING 0.00000 0.00000 5.00000 0.00000 0.00000 0.00000 0.00000 0.00000	THREST PHASE GCNF ANGLE - (CEG) 0.CC000 0.CC000 0.CC000 0.CC000 1.C0000 1.C0000	S CONTECL TO BE THRUST FHASE "CLCCK ANGLE" 10EG) 0.00000 0.00000 0.00000 0.00000 1.00000 0.000000 0.00000000	THFUST FHASE	THRUST FFASE - GLCCK RATE - (CEG/SEC) 0.00000 - 0.00000 0.00000 0.00000 0.00000 0.00000			
THEUST C	C. C	#TICKS (NCK-ZE THEOTILING 0.00000 0.00000 5.00000 0.00000 0.00000 0.00000 0.00000 0.00000	THREST PHASE GCNF ANGLE - (CEG) 0.CC000 0.CC000 0.CC000 0.CC000 1.C0000 1.C0000	S CONTECL TO BE THRUST FHASE "CLCCK ANGLE" 10EG) 0.00000 0.00000 0.00000 0.00000 1.00000 0.000000 0.00000000	THFUST FHASE	THRUST FFASE - GLCCK RATE - (CEG/SEC) 0.00000 - 0.00000 0.00000 0.00000 0.00000 0.00000			
THEUST CONTROL THEUST PHASE NUTRE F	CCASECL CESIGN THELST FHASE END TIME CCASSO CCOCCO CCOCCO CCOCCO CCCCO CCCC CCCCO CCCCO CCCCO CCCC CCCCO CCCC CCCC CCCC CCCC CCCC CCCC CCCC CCCC	#TICKS (NCK-ZE THEOTILING 0.00000 0.00000 5.00000 0.00000 0.00000 0.00000 0.00000 0.00000	THREST PHRSE	S CONTECL TO BE THRUST FHASE "CLCCK ANGLE" 10EG) 0.00000 0.00000 0.00000 0.00000 1.00000 0.000000 0.00000000	THFUST FHASE	THRUST FFASE - GLCCK RATE - (CEG/SEC) 0.00000 - 0.00000 0.00000 0.00000 0.00000 0.00000			
THEUST CONTROL THEUST PHASE NUTRE F	CCASECL CESIGN THELST FHASE ENG TIME CCASSS C.COCCO C.COCCO C.COCCO C.CCCO C.CCC C.CC	######################################	THREST PHRSE	S CONTECL TO BI THRUST FHASE	THFUST FHASE	THRUST FFASE - GLCCK RATE - (CEG/SEC) 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000			
THEUST CONTROL THE	CCATFOL OFSIGN THELST FHASE END TIME COATS	######################################	THREST PHASE GCNF ANGLE - (CEG) 0.CC000 0.CC000 0.CC000 0.CC000 1.C0000 1.C0000 0.C0000 1.C0000 1.C0000	S CONTECL TO BI THRUST FHASE	THFUST FHASE	THRUST FFASE - GLCCK RATE - (CEG/SEC) 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000			

-1. CONTHO	L INACTIVE (ON ECUNG) L WITHIN TCLERANCE REGION
SALANK COPPON REQUIPE	

* CURPENT OF TIPE	1.602 7
Market Market States (Market States)	
Windows - Williams I and American	OF FOOD C
(400-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	82
	PAGE B
	30

			**************************************				*******		*****
***********	**********		* * * PEFERFNGE TI	PROPERTIES AND	UKRIICN *		******	,	****
		ING CREIT	TRANSFER AND INJECT.	ION CCIDITIONS	****				
LAUNCH CONSTRETAT	\$								
MINIPUM ECCSTER L MAXIMUM ECCSTER L LATITUCE OF LAUNC	AUNCH PZIMUTH	120.00000					•		
INNER PERKING CRB				•	•	•			· : .
FACILS	6561.93293603	KM:	PAX ALLOWABLE E	G INCLINATION DINCLINATION	59.76472 28.60800	CEG OEG			*
MIN FLAME CHANCE EQ INCLINATION OF			4.20728 DFG 63.97200 DEG	Sometime to the second control of the	مطريعة بطوع يعاني	State of terrories on temporal for			an and the same of
TUG CHAFAGTEFISTI	GS AND REGUIRE	FATS		- Marie - Santa al Marie - Jacobs - Santa - Sa	in the state of th	**	Milyan az a . Ale is giejam ann u summer - seague ampe		
MAY FUFL HEIGHT	10673.00000 K(6	FIRST IMPULSE, CEL' SECOND IMPULSE, CEL' THIFC IMPULSE, CEL' TOTAL VEL INCFEMEN	VB .57569109 VO .54819966	JE+80 KM/SE	C	FUEL FOR DELVA FUEL FOR DELVO TOTAL FUEL	*24855C3185+6	4 KG
			A THAN THE TUES FUE		-	4,44,49 ********************************			
SINGLE INFLUSE IN	JECTICE FROM TO	HE INNFR F	ARKING OREIT	والمعافدات والواراة فتتوا يبدأ الافتاة				ag ga - aga al	
THE LICE PERMS	-5375144615461	ANIGEL	namerica, america, e este el renge e mismocrania, agricana una				المعاملة عرفات المساعدية عربات المعامدية	•	
-TNJECTICAFAGAHET	fet		and the state of t						
		•02GEG	INJECTION IM- IN-FLANE ANG OUT-OF-FLANE	LE • - Ch J		516033E+01 226642E+02		ayan a sana and the a ssistance of the sana and the sana	

是是我们因为我们的人,我们就是我们的人,我们就是我们的人,我们就是我们的人,我们就是我们的人,我们就是我们的人,我们就是我们的人,我们就是我们的人,我们就是

- DAYS	FRCH CLICFF-	443956.65476000 	CONTECL PHASE 1 FRESENT S/C MASS- 1988.300000 FOWER AVAILABLE 21.00000		IS- BCCY ENCKE-
- 5/6 6	ELATIVE STATES				MASNITUEE
SUN	PCSITION VELCCITY	14895CC7432G16E+C9 59152528347334E+C1	75900043971998E+07 38384877901900E+02	.16174047290000E+04 73312337503000E+01	.14514332975374E+05 .39523866915317E+02
SUN EARTH	PCSITION VELCCITY	5521104450C00CE+64 654567730C000CF+61	.21F714E9#C0000E+04 85261C783CC0CGE+01	.1617404720000FE+04 7331233750000E+01	.656153253603426+04 .1321680590670486+02
T ENCK	FCSITION VFLCCITY	72117697876976E+C9 02857481549963E+C1	.21C27155C709296+09 4247537485922CE+62	11195358181826E+68 85287839554858E+C1	.751285468135468+09 .450936769413366+02
PPIH	CCELEFATICHS	.84558C53745666E-02	309485E7036085E-02	Z 25953988666168E-02	MAGNITUEE -937050350501376-32
PFF1	RFINE ECCIES	45669677252119F-09	12214915425694E-09		- -+4657245672666 - 86
RACIA	ATICN FRESSURE	C.	PETARI BOUA CHANGE	U. S.	0. 1.
Jell	AN CATE 2	0. ************************************	PRIMARY BOTTY CHANGE	PRIMARY	9.
JULIA — BAYS	AN CATE 2	C	PETROE BOUL CHANGE	PRIMARY CO-KGEFHEREN	BODY SLA
JULII DAYS CAYS	AN CATE 2'	0. ************************************	PFIMARY BORY CHANGE - CONTROL FHASE 1 FRESENT S/C MASS- 1988-00000	PRIMARY CO-KGEFHEREN	BODY SLA SECCY ENCKE
JULII DAYS CAYS	AN CATE 20 FROM LAYACH- FROM CUTCFF-	0. ************************************	PFIMARY BORY CHANGE - CONTROL FHASE 1 FRESENT S/C MASS- 1988-00000	PRIMARY CO KG FHENER) 100 KM TARGET E	0. RODY SLN SECTY ENCKE RODY ENCKE MAGNITUE 14558555204CEE.CS
JULY. DAYS CAYS	FECH LAUNCH- FECH CUTCEF- FELATIVE STATES FULL STATES FULL STATES FULL STATES	C	PRIMARY BORY CHANGE - CONTROL PHASE 1 FRESENT S/C MASS- 1988.000000 POMER AVAILABLE 21.000000	PRIMARY 000 KG	0. RODY SLN SECTY ENCKE RODY ENCKE MAGNITUE 14558555214CEE-05
JULT/ OAYS CAYS 	AN CATE 20 FROM LAUNCH- FFCP CUTCFF- RELATIVE STATES- POSITION VELOGITY VELOGITY	C. 4439EC.22669455 -3.57191456 589.92678544 14843448457350L+C9 .260627932545726401 914912156324294+C5	PFIMARY BORY CHANGE — CONTROL FHASE —— 1 FFESENT S/C MASS— 1988.000000 POMER AVFILABLE—— 21.000000 Y -1849964251C694E+08 -35178178377877E+02 -17125875244252E+07	PRIMARY CO KG	BODY SLN IS ECCY ENCKE BODY ENCKE -145585555204CEE+05 -3558337827515EE+02 -22553261251777E+07 -72216551369346E+C1
JULTI DAYS CAYS S/C I SLM FARYI ENCKI	AN CATE ZO FROM LAUMCH- FROM CUTOFF- RELATIVE STATES- POSITION VELOGITY FOSITION VELOGITY E POSITION	C. 4429EC.22669455 -3.57191456 -58.92678544 14843447457350E-66 .260627932545726-01 914912156324394-65257327622538544-60	PFIMARY BORY CHANGE — CONTROL FHASE —— 1 FFESENT S/C MASS— 1988.000000 POMER AVFILABLE—— 21.000000	PRIMARY CGO KG	BODY SLN (S ECCY ENCKE BODY

JULIAN CATE 2	1444 C23.65476000	CONTECL PHASE 2	PRIPARY E	OCY SLN
AVS FROM LAUNCH	64.000u0000	-FRESENT S/C MASS1988.00000000	KGEPHENERIS	EGGY ENCKE
PAYS FECH CUTCEF-	529.49876000	FOHER AVAILABLE 15.13509631	KW TARGET BO	DY ENCKE
Francisco (Sept. 1988) - 1885 - 1885 - 1886	THPUST PHASE THEUST PHASE		 THFUST FHASETHRUST-FA	ASE
	GURATION THECTTLING	CONE ANGLE CLOCK ANGLE	CONE RATE CLOCK RA	
	(PAYS)	(DEG) (DEG)	(CEG/SEC) (CEG/SE	(C)
	-76 .06336360	66-160000CC224-64CG000C-		806-1
C RELATIVE STATES		entre de la company de la com	2	PAGNITUCE
UN PCSITICH	to the control of the		21882658822636E+98	16521530876416E+35-
VELCCITY	.22518367777927F+C2	20211559127555E+02	28178336655736E+C1	.303897624786725+02
### PC<11100		44504443265044540	340406704076707	
VELCCITY	+.405640088854596+01	76497367616778E+01	-:21882658#22630E+08	
AEFF.114	***************************************	15431251514145401	281783366557366+01	•91056E18573EJ8E+01
NCHE POSTTION		.186814388724406+08	39583692665012E+08	. 6543/3652737566+69
AETCCIIA	.218934E89453E0E+C2	259518472751918+02	396911242199785+01	.34184444018814E+02
WE ACCELEFATIONS	and the second of the second o			MAGNITUGE
FIRSEY OCCY	.15060468136011E-05	.35340160699750E-u5	457068484216396-06	.38666377688876E-05
FRICKEING BOTTES	.6524C42916f330F-1C	.22473266591271E+09	.145C1462924943E-C9	627533043120633E-C9
PELST			26271267531807E-06	33125743508535E-06
ACIATION PRESSURE	ű.	0.	0.	0.
	***	CCNTRCL HASE CHANGE	****	
	The state of the s			
	1444 C36. E547 E0D C	CONTROL PHASE 3	PRIMARY R	
AYS FECH LAUNTH-	145.2000000	CCNTRCL FHASE 3 FPESEN: 5/C MAST- 1876.64497148	KG EFHENFRIS	ECBY ENCKE
AYS FECH LAUNCH-	145.2000000	CONTROL PHASE 3	KG EFHENFRIS	
AYS FECH CUTCEF-	145.2000000	CCNTRCL FHASE 3 FPESEN: 5/C MAST- 1876.64497148	KG EFHENFRIS	DY EVEKE
AYS FECH CUTCFF-	145.330cc000 	CCNTRCL FHASE 3 FPESENT S/C PAST- 187E.54497148 FOHER AVFILABLE	KG EFHENFRIS KH TARGET EO THRUST FHASE THRUST PH CONE RATE GLOCK RA	BCDY ENCKE DY ENGKE ASF
AYS FECH CUTCFF-	THPUST PRASE THRUST PHASE PURATTER THRUST PRASE THRUST PHASE (DAYS)	CCNTRCL FHASE 3 FPESENT S/C MAST- 1876.64497148 FOHER AVAILABLE	KG EFHENFRIS KH TARGLT E0 THRUST FHASE THRUST PH (CEG/SEC) (CEG/SEC)	ASF TE C)
AYS FECH CUTCFF	145.339CC000	CCNTRCL FHASE 3 FPESENT S/C MAST- 1876.54497148 FOHER AVAILABLE	KG EFHEMFRIS KH TARGET ED THRUST FHASE THRUST PH CONE RATE GLOCK RA	ASF TE C)
AYS FFCH CUTCFF-	145.230ccngg 452.45676000 THPUST STASE THEUST PHASE PURATION THEOTYLING (DAYS) 90.CC1630060 1.00000000	CONTROL FHASE 3 FPESENT S/C MAST- 1876.54497148 FOHER AVAILABLE	KG EFHENFRIS KH TARGLT E0 THRUST FHASE THRUST PH (CEG/SEC) (CEG/SEC)	ASF TE C)
AYS FFCH LUTCH-AYS FFCH CUTCFF	145.230ccngg 452.45676000 THPUST STASE THEUST PHASE PURATION THEOTYLING (DAYS) 90.CC1630060 1.00000000	CCNTRCL FHASE 3 FPESFNI S/C MASI- 1876.54497148 FOHER AVFILABLE	KG EFHEMERIS KM TARGET ED THRUST FHASE THRUST PH (CNE RATE GLCGK RA (CEG/SEC) (CEG/SEC) C.00CC000C 0.00000	ASF TE C) OCO PAGNITUDE
AYS FECH CUTCFF AYS FECH CUTC	145.239ccngg 452.4567C000 THPUST SHASE THEUST FHASE PURATTCH THEOTYLIPE (DAYS) 90.ccnggogg 1.00000000	CCNTRCL FHASE 3 FPESFNT S/C MAST- 1876.54497148 FOHER AVAILABLE	KG EFHEMFRIS KW TARGET ED THRUST FHASE THRUST PH COME RATE GLOCK RA (CEG/SEC) (CEG/SE C.000C00000 0.00000	ASF TE C) 300 WAGNITUTE .25407190291064E+05
AYS FECH CUTCFF-AYS FECH CUTCF	145.230cc000 452.45676000 THPUST STASE THFUST PHASE PURATION THEOTYLINE (DAYS) 90.CC1000000 1.000000000 .015056750256666+C0 .2265C188504456E+62	CCNTRCL FHASE 3 FPESFNT S/C MAST- 1876.54497148 FOHER AVFILABLE	KG EFHEMFRIS KW TARGET ED THRUST FHASE THRUST PH (COME RATE GLOCK RA (CEG/SEC) (CEG/SE 0.0000000000000000000000000000000000	######################################
AYS FECH CUTCFF- AYS FECH CUTCFF- AG RELATIVE STATES Lh PCSITION VELOCITY	145.339600000 452.45676000 THPUST FRASE THFUST FHASE FURATION THEOTYLINE (DAYS) 90.60030000 1.000400000	CCNTRCL FHASE 3 FPESFNT S/C MAST- 1876.64497148 FOHER AVAILABLE	KG EFHEMFRIS KH TARGET 80 THRUST FHASE THRUST PH (COME RATE GLOCK RA (CEG/SEC) (CEG/SEC) 0.000000 Z 28307385253284E+08	ASF TE C) 300 WAGNITUTE .25407190291064E+05
AYS FFCH CUTCFF- AYS FFCH CUTCFF- /G RELATIVE STATES LN POSITION - VELOCITY AFTH FOSITION - VELOCITY	145.230cc000	CCNTRCL FHASE 3 FPESFNT S/C MAST- 1876.84497148 FOHER AVFILABLE	KG EFHEHERIS KW TARGET ED THRUST FHASE THRUST PH CONE RATE GLOCK RA (CEG/SEC) 10EG/SE 0.00000000000000000000000000000000000	######################################
AYS FFCH CUTCFF- AYS FFCH CUTCFF- AG RELATIVE STATES LN PCSITION VELOCITY AGTH FCSITION NOWF PCSITION	145.230cc000 452.45676000 THPUST STASE THEUST FHASE PURATION THEOTYLIPE (DAYS) 90.CC0000000 1.000000000 .81005675925666466.00315054754564636.00315054754564636.0045647365166266.00	CCNTRCL FHASE 3 FPESFNT S/C MAST- 1876.64497148 FOHER AVAILABLE	KG EFHEHERIS KW TARGET ED THRUST FHASE THRUST PH (CONE RATE GLCCK RA (CEG/SEC) (CEG/SE 0.00CC000C 0.0000W 28367385253284E+C8 49083719590774E+C0 28367385253284E+C8 49083719590774E+CC 52369783737429E+D8	######################################
AYS FECH CUTCFF- AYS FECH CUTCFF- VG RELATIVE STATES LN POSITION VELOCITY AFTH FOSITION VELOCITY	145.230cc000 452.45676000 THPUST SMASE THFUST PHASE PURATION THFCFTLIPE (DAYS) 90.CC1000000 1.000000000 .0100567502566664ce .2265C168504456E+6231505475456463E+C8 .25669668777726+61456473051662696+C6	CCNTRCL FHASE 3 FPESFNT S/C MAST- 1876.64497148 FOHER AVAILABLE	KG EFHEHERIS KW TARGET ED THRUST FHASE THRUST PH CONE RATE GLOCK RA (CEG/SEC) 10EG/SE 0.00000000000000000000000000000000000	######################################
AYS FECH CUTCFF- AYS FECH CUTCFF- AGE RELATIVE STATES LN POSITION VELOCITY MONE POSITION VELOCITY. AGE POSITION VELOCITY. AGE POSITION VELOCITY.	145.230cc000 452.45676000 THPUST STASE THFUST PHASE PURATION THEOTHLINE (DAYS) 90.CC000000 1.00000000 A10056750256166+CR -22650188504456E+G2 -31505475458463E+C8 -25669596777726+61 -456473051652695+C6 -23712446713307E+C2	CCNTRCL FHASE 3 FPESFNT S/C MASI- 187E.54497148 FOHER AVFILACLE	KG EFHEMFRIS KW TARGET ED THRUST FHASE THRUST PM (CRE FATE GLCCK RA (CEG/SEC) (CEG/SEC) C.00CC000C 0.0000W 28367385253284E.C8 -49683719590774E.CC 52369783737429E.D8 57595073358497E.D0	######################################
AYS FECH CUTCFF- AYS FECH CUTCFF- AG RELATIVE STATES LN PCSITION VELOCITY NOWF POSITION VELOCITY ACCELERATIONS AIPASY FOCY	145.230cc000 452.45676000 THPUST STASE THEUST FHASE PURATION THEOST FHASE (DAYS) 90.CC0000000 1.000000000 .81005675925666466.00315054754564636.0045647365166269777726.0145647365166269777726.014564736516626976.00 XX655476647874876-06	CCNTRCL FHASE 3 FPESENT S/C MAST- 1876.54497148 FOHER AVFILABLE	KG EFHEHERIS TARGET ED THRUST FHASE THRUST PH (CNE RATE GLCCK RA (FEG/SEC) (REG/SEC) 0.00CCD00C 228307385253284E+C8 -490837195907742+C028367385253284E+C8 -490837195907742+CC52365783737429E+D857595073358497E+D0 2 -22954149374820E-06	######################################
ATS FECH CUTCFF- AGENTINE STATES LN POSITION VELOCITY NOWE POSITION VELOCITY ACTH POSITION VELOCITY ACTH POSITION VELOCITY ACTH POSITION ACTH POS	145.230cc000 -452.4567600	CCNTRCL FHASE 3 FPESFNT S/C MAST- 1876.84497148 FOHER AVFILABLE	KG EFHEHERIS KH TARGET ED THRUST FHASE THRUST PH CONE RATE GLOCK RA (CEG/SEC) 10EG/SE 0.00CC000C 0.0000W 228307385253284E.C8 -49083719590774E.C028367385253284E.C8 -45083719590774E.C052369783737429E.D857595073358497E.D0 2 -22954148474820E-06 -38429015264374E-11	## CDY ENCKE ASF TE C) 000 *## CNTTLCE .254071502910646+09 .25507463354156+00 .143880727200146+09 .25132222542666+02 .25132222542666+02 .25132222542666+02 .25149283613636+02 ### AGNITUTE .2055## AGNITUTE .2055## AGNITUTE .2054# AGNITUTE
AYS FECH LOUNCH- LAYS FECH CUTCFF- LAYS FECH CUTCF	145.230cc000 452.45676000 THPUST STASE THEUST FHASE PURATION THEOST FHASE (DAYS) 90.CC0000000 1.000000000 .81005675925666466.00315054754564636.0045647365166269777726.0145647365166269777726.014564736516626976.00 XX655476647874876-06	CCNTRCL FHASE 3 FPESENT S/C MAST- 1876.54497148 FOHER AVFILABLE	KG EFHEHERIS TARGET ED THRUST FHASE THRUST PH (CNE RATE GLCCK RA (FEG/SEC) (REG/SEC) 0.00CCD00C 228307385253284E+C8 -490837195907742+C028367385253284E+C8 -490837195907742+CC52365783737429E+D857595073358497E+D0 2 -22954149374820E-06	######################################

		****	CONTROL PEASI	E CHANGE	••••		
JULIAN CATE CAYS FECH LAUNCH- DAYS FROM CUTCFF-	2444186.65476000 223.6356000 363.49876000		CONTECL PHASE FRESENT S/C PASS- 1 FOMER AVAILABLE		KG KH	PRIFARY BOCY EPHLMERIS BC TARGET BODY	
	DURATION	THRUST, PHASE THROTTLING		HRLST PHASE CLOCK ANGLE	CONE FATE	THRUST PHASE CLCCK RATE (DEG/SEC)	•
racingua (ig. 1945) rang kalupatèn kapatèn kepadan	242.0(700000	1.00066000		69.00036000	6.00620000	0.03000000	
S/C. RELATIVE - STATE		V	v	<u> </u>	z		MAGNITLEE
SUN FESTTICN VELCCITY	.2243675	1756627E+09 4189548E+02	220012737418 .664614337683		18091999694180 .19392027979744		.21475976238743E+05 .16148864977663E+62
EARTH POSITION VELOCITY	.3655683	18217577E+CS 11805848E+C2	32687320JE73		18091959694180 .19392027975748		.34926323692965E+09 .39152388758399E+C2
ENCYF PRSITION VELOCITY		4373E0E2E+59	1244363458729 395346971233		5(838246936660 .10256107100954		.355253605C57106+05 .15268616454362E+02
SIC ACCELERATIONS		X	Y	045-06	.76994689595545		#ACHITUDE .13395329765556-05
PPIPAPY BCCY Pertupeing Egries		16990655 5- 06 45564935 6- 10	.936315095674 101548341657				-17201423478285E-1 6 -
		78934094E-07	1(4715598598		.17278253575345	E-08	.1361556C077444E-06
THELST PADIATION SEFECTURE	6701577 E C.	78934094E-07	104715598598 C.	986-00	0.		.1361556077444E-06
THELST PADIATION SPECTUR	8769577 E C.	78934094E-07	104715598598 C. 	198E-06	0.		
THELST PADIATION SPECTUR	2444425.65476990	78934094E-07	104715598598 C.	198E-00 SE CHANGE	0.	FRIFARY BODY	
JULTAN TATE DAYS FECH LANACH-	2444429.6547898C 475.68965660	18934054E-07	CCNTRGL CHAS CONTRGL CHAS CONTRGL CHAS CONTRGL CHAS FRESENT S/G PAS:- 1 FOWER 'AVEILABLE	5E CHANGE 639.30654634 6.49525979	KG - KH	PRIMARY BODY EPHEMERIS BOTARGET EODY	ENCKE
JULTAN TATE DAYS FECH LANACH-	2444429.65476980 475.69769660 123.49872986	18934054E-07	CONTROL CHASE FRESENT S/G MASS- 1 FOMER AVEILABLE THFUST PHASE CCNE ANGLE	SE CHANGE	KG - KW - THRUST FHASE	PRIMARY BODY EPHEMERIS BO TARGET BODY THRUST_PHASE CLCCK RATE	SLN COY ENCKE
JULTAN TATE DAYS FECH LANACH-	2444425.65476990 476.656666666666666666666666666666666666	THRUST FHASE	1(4715598598 C. CCNTRCL CHAS CONTRCL FFASE FRESENT S/G MASI- 1 FOHER AVELLABLE THECST PHASE COLE ANGLE (DEG)	SE CHANGE 5 (639.33654634	KG - KW - THRUST FHASE CONE FATE (GEG/SEC)	PRIMARY BODY EPHEMERIS BO TARGET BODY THRUST PHASE CLCCK RATE (CEG/SEC)	ENCKE ENCKE
JULTAN TATE DAYS FECH LANACH-	2444429.65476980 475.69769660 123.49872986	78934094E-07	1(4715598598 C. CCNTRCL CHAS CONTRCL FFASE FRESENT S/G MASI- 1 FOHER AVELLABLE THECST PHASE COLE ANGLE (DEG)	SE CHANGE	KG - KW - THRUST FHASE CONE FATE (GEG/SEC) 0.00000000	PRIMARY BODY EPHEMERIS BO TARGET BODY THRUST_PHASE CLCCK RATE	SLN ENCKE
THELST PADIATION PERSON JULIAN CATE DAYS FECH LAUACH- DAYS FECH CLICFF-	2444429.65476990 476.6976966 123.49872900 THRUST FHASE OURAFICN (CAYS) 55.63300000	THRUST FHASE-THEOTILING	CONTROL CHAS CONTROL CHAS CONTROL CHAS CONTROL CHAS FRESENT S/G MASS- 1 FOHER 'AVELLABLE THFUST PHASE CONE ANGLE (DEG) 120.501000000000000000000000000000000000	SE CHANGE	KG KW THRUST FHASE (GEG/SEC) 0.00000000	PRIMARY BODY EPHEMERIS BO TARGET BODY THRUST_PHASE CLCCK RATE (CEG/SEC) 0.00030000	YAGNITUCE
JULTAN TATE DAYS FECH LAUNCH- DAYS FECH CLICFF- S/G PELATIVE STAT	2444425.6547600C 476.656660 123.4587000C THEUST FHASE OURATION (CAYS) 55.00000CC	THRUST FHASE—THEOTILING 1.03003000	CONTROL WHAS CONTROL WHAS CONTROL WHAS CONTROL WHAS CONTROL WHAS FRESENT S/G PAS:- 1 FOMER 'AVELLAGLE THFUST PHASE THFUST PHASE CONE ANGLE (DEG) 12C.5C1CCUCC 2	SE CHANGE 5 (639.30654634 6.49525979 IMPLIST PHASE CLCCK ANGLE (10FG) 256.74200000 798E+08	KG KH THRUST FHASE (CONE FAIE (GEG/SEC) 0.0000000	PRIMARY BODY EPHEMERIS BO TARGET BODY THRUST PHASE (CEG/SEC) 0.000100CC	#AGNITUDE STA
THELST PADIATION PERSON JULIAN CATE DAYS FECH LAUACH- DAYS FECH CLICFF-	2444425.6547600C 476.656660 123.4587000C THEUST FHASE OURATION (CAYS) 55.00000CC	THRUST FHASE-THEOTILING	CONTROL CHAS CONTROL CHAS CONTROL CHAS CONTROL CHAS FRESENT S/G MASS- 1 FOHER 'AVELLABLE THFUST PHASE CONE ANGLE (DEG) 120.501000000000000000000000000000000000	SE CHANGE 5 (639.30654634 6.49525979 IMPLIST PHASE CLCCK ANGLE (10FG) 256.74200000 798E+08	KG KW THRUST FHASE (GEG/SEC) 0.00000000	PRIMARY BODY EPHEMERIS BO TARGET BODY THRUST PHASE (CEG/SEC) 0.000100CC	YAGNITUCE
JULTAN TATE DAYS FECH LAUACH- DAYS FECH CLICFF- S/G PELATIVE STAT VELCCITY	2444425.65476080 475.6506660 123.45872900 THFUST FHASE OURAFICN (CAYS) 55.63300000	THRUST FHASE—THEOTILING 1.03003000	CONTROL CHAS CONTROL CHAS CONTROL CHAS CONTROL CHAS FRESENT S/G PAS:- 1 FOMER 'AVFILABLE THFLST PHASE CONE ANGLE (DEG) 120.501000000000000000000000000000000000	SE CHANGE	KG KH THRUST FHASE (CONE FAIE (GEG/SEC) 0.0000000	PRIMARY BODY EPHEMERIS BO TARGET BODY THRUST PHASE (CEG/SEC) 0.00000000000000000000000000000000000	PAGNITUCE 29326457355213E+C515863173717275E+02
JULTAN TATE DAYS FECH LAUNCH- DAYS FECH CLICFF- S/G PELATIVE STAT	2444429.6547600C 475.6576060 123.498700C THEUST FHASE OURAFICN (CAYS) 55.63000CC FS251815	THRUST FHASE- THRUST FHASE- THEOTILING 1.03003000 X 292371336+09- 544902972+(1	CONTROL CHAS CONTROL CHAS CONTROL CHAS CONTROL CHAS FRESENT S/G PAS:- 1 FOMER 'AVFILABLE THFLST PHASE CONE ANGLE (DEG) 120.501000000000000000000000000000000000	SE CHANGE	KG KN THRUST FHASE CCNE FATE (GEG/SEC) 0.00000000000000000000000000000000000	PRIMARY BODY EPHEMERIS BO TARGET EODY THRUST PHASE (ICEG/SEC) 0.00000000000000000000000000000000000	SLN OY SNCKE ENCKE ENCKE FAGNITUDE 29326457359213E+D5- 15863177717275E+02 302981928284485E402
JULTAN CATE DAYS FECH LAUNCH- DAYS FECH CLICFF- S/G PELATIVE STAT VELCTITY EAFTH	2444429. F547E00C 475. CGTCCGGG 123. 498720GC THFUST FHASE OURAFICN (CAYS) 	THRUST FHASE— THEOTILING 1.03C0300C X 29237133E+C9 5449C2972+C1 42180903E+C9 73745280E+C8	114715598598 C. CCNTRCL PHAS CONTFCL PHASE FRESENT S/G MASS- 1 FOHER AVELLABLE THELST PHASE T CCNE ANGLE (DEG) 120.501000000000000000000000000000000000	SE CHANGE	KG KW THRUST FHASF (GEG/SEC) 0.00000000 2 .25332247271527 .16078524365953 .25332247271527 .16078524365953	PRIMARY BODY EPHEMERIS BO TARGET BODY THRUST PHASE (CEG/SEC) 0.00000000000000000000000000000000000	PAGNITUCE ENCKE ENCKE ENCKE ENCKE ENCKE ENCKE ENCKE 29326457357213E+05 15863177717275E+02 38298152828485E+02 70843227823481F408
JULTAN CATE DAYS FECH LAUACH- DAYS FECH CLICFF- S/G PELATIVE STAT VELCTITY EAFTH PCSTTICH- VELCCITY	2444429. F547E00C 475. CGTCCGGG 123. 498720GC THFUST FHASE OURAFICN (CAYS) 	THRUST FHASF- THRUST FHASF- THROTTLING 1.G3CC3CCC X 292371336+C9- 5449C297±+C1 421809C3E+C9- 7374528CE+C2	114715598598 C. CCNTRCL PHAS CONTFCL PHASE FRESENT S/C PASI- 1 FONER "AVAILABLE THFUST PHASE CCNE ANGLE (DEG) 12C.5C1CCUCC 2	SE CHANGE	KG KN THRUST FHASE CCNE FATE (GEG/SEC) 0.00000000000000000000000000000000000	PRIMARY BODY EPHEMERIS BO TARGET BODY THRUST PHASE (CEG/SEC) 0.00000000000000000000000000000000000	SLN OY SNCKE ENCKE ENCKE FAGNITUDE 29326457359213E+D5- 15863177717275E+02 302981928284485E402
JULTAN CATE DAYS FECH LAUNCH- DAYS FECH CLICFF- S/G PELATIVE STAY SUH PCSTTICN- VELCCITY EAFTH PCSTTICN- VELCCITY ENCKE PCSTTICN- VELCCITY	2444425.65478080 475.6696560 123.45872080 THFUST FHASE OURATION 664751 	THRUST FHASE— THEOTILING 1.03C0300C X 29237133E+C9 5449C2972+C1 42180903E+C9 73745280E+C8	114715598598 C. CCNTRCL PHAS CONTFCL PHASE FRESENT S/G MASS- 1 FOHER AVELLABLE THELST PHASE T CCNE ANGLE (DEG) 120.501000000000000000000000000000000000	SE CHANGE	KG KW THRUST FHASF (GEG/SEC) 0.00000000 2 .25332247271527 .16078524365953 .25332247271527 .16078524365953	PRIMARY BODY EPHEMERIS BO TARGET EODY THRUST_PHASE (CEG/SEC) 0.000300LC E+C8 L+01 E+C8 E+C1 E+C8 E+C1 E+C8 E+C1	PAGNITUCE ENCKE ENCKE ENCKE ENCKE ENCKE ENCKE ENCKE 29326457357213E+05 15863177717275E+02 38298152828485E+02 70843227823481F408
JULIAN TATE DAYS FECH LAUNCH- DAYS FECH CLICFF- S/G PELATIVE STAY SUH PCSTTICN- VELCCITY EAFTH PCSTTICN- VELCCITY EACHE PCSTTICN- VELCCITY VELCCITY S/C ACCELEFATICNS	2444429.65476990 476.66766666 123.49872900 123.49872900 0484710N (CAYS) 55.63300000 FS251415; 645428; 378827	THRUST FHASE— THEOTILING 1.03C0300C X 29237133E+C9 5449C2972+C1 42180903E+C9 73745280E+C8	114715598598 C. CCNTRCL PHAS CONTFCL PHASE FRESENT S/G MASS- 1 FOHER AVELLABLE THELST PHASE T CCNE ANGLE (DEG) 120.501000000000000000000000000000000000	SE CHANGE	XG KW THRUST FHASE CONE FATE (BEG/SEC) 0.0000000 2 -25332247271527 :16078524365953 -25332247271527 :16078524365953 -25332247271527 :16078524365953	PRIMARY BODY EPHEMERIS BO TARGET EODY THRUST PHASE (CEG/SEC) 0.00000000000000000000000000000000000	#AGNITUE ENCKE ENCKE ENCKE ENCKE ENCKE ENCKE 293264573572135+15-15-15-15-15-15-15-15-15-15-15-15-15-1
JULTAN CATE DAYS FECH LAUNCH- DAYS FECH CLICFF- S/G PELATIVE STAY SUH PCSTTICN- VELCCITY EAFTH PCSTTICN- VELCCITY ENCKE PCSTTICN- VELCCITY	6769577E6769577E6769577E75.676950075.676950075.677900075.677900000000000000000000000000000000000	THRUST FHASE- THRUST FHASE- THROTTLING 1.G3CG300C X 292371336+C9- 5449C297±+C1 421809G3E+C9- 73745280E+C2 C212388CE+C8- 17875675E+C1	1(4715598598 C. CCNTRCL PHAS CONTFCL PHASE	SE CHANGE 56 CHANGE 57 (639,30654634 6.49525979 IMPLIST PHASE CLCCK ANGLE (10FG) 206.74200000 798E+08 798E+01 527E+07 448E-10	KG KN THRUST FHASE CCNE FATE (GEG/SEC) 0.000000000 25332247271527 .1607852436595325332247271527 .1607852436595317497660741223 .18651458056417	PRIMARY BODY EPHEMERIS BO TARGET EODY THRUST_PHASE (LCCK RATE (LEG/SEC) 0.000300LC E+C8 E+01 E+08 E+01 E+08 E+01 E-08 E+01 E-12	SLN ENCKE ENCKE

Jil	Bank. C.	- 1	2444481.65478	1) () ()	CCNTECL Fh	ASE	F.			Y. BCCY.	• • SLA	
		P CUTCEF-	525.000CC 68.4987C		FRESENT S/ POWER AVAI		1584.46949691 9.64559498	KG		RIS ECO	ENCKE	
S/C	PELI	TIVE STATE		X		γ	• • • • • • • • • • • • • • • • • • •	z			MAGNITURE	
SLA	(4.77)	PCSITION	.226	55254C07362E+(\$. 697	17242561	1515E+C8	.3092887863	E7E4E+08	•	2350463154515	4E +DC
**********		VELECTTY -		76439527G10E+C2		45832536	359E+02	6127269617	6943E+J0		2164772556005	
EAF	TH :	PESTTION	.876	012616660836+08	. 128	89648327	7078E+09	.30978878636	6764E+08		1568663784853	CF+CC
		VELCOTTY		629807729236+02		52234313	416:+02	6127269617	6943E+40		3427445783328	
ENC	KE	PCSITION	215	056650521646+64	189	01200356	085E+08	8806871686	1246E+07		2995513299993	95+68
	المستعدا	VELCOTTY-		A6276615312E+G1-		03670375	554E+01	1771768295	37905+61		7327828668647	
S/C FFI PER THE	ACCE	LEFOTIONS		X		' y		2			PAGNITUCE	•
FFI	MARY I	PCCY	22(10736701162E-05	-,677	33862925	448E-36	-,3004898571	#446F=86 -		23-2457115998	75-85
PER	TUPEI	NE FOCIES	250	87919230339E-10		49863633		3111372417			25590+6652934	
THE	UST			63762714169E-CE	328	27550522	234E-06	4207440197			3569664476779	
01	IFFICE	M EEEEENSE										
•			************		************	******				******		******
*****		بالمحمد الشماء بهميم		and the standard of the standard or		**		· · · · · · · · · · · · · · · · · ·				
• `.			*** **********************************	***	CCN	TRCL PFA	SE CHANGE	4***				
			2444523.65478	****						Y 30CY	SLN	
CAY	S FFC	P LAUNCH-	567. CONCC	000	CENTROL FH	ASE					Y ENCKE	
CAY	S FFC			000	CENTROL FH	ASE	7	KG		RIS ECD'		
CAY	S FFC	P LAUNCH-	567. CONCC	900 000	PRESENT S/A	ASE C PASS- LAELE	1493.44201936	KG	EPHENE TARGET	RIS ECD	Y ENCKE	
CAY	S FFC	P LAUNCH-	567.CGMCC 26.49870 THPUST PHASE DURATION	900 000	CGNTFCL FH PRESENT S/I FOHER AVAIL THELST FI CCNE AND	ASE C PASS- LAELE HASE GLF	7 1493.44201936 16.67987938 THRUST PHASE CLCCK ANGLE	KG KH THRUST FHASE CONF FATE	EPHENE TARGET THRUST CLCCK	RIS ECD BODY PHASE RATE	Y ENCKE	
CAY	S FFC	P LAUNCH-	567.CGMCC 26.49870 THPUST PHASE DURATION (CAYS)	DOG DOG TPPLST FHAS THRCTTLING		ASE C PASS- LAELE HASE GLE	7 1493.44201936 16.67987938 THRUST PHASE CLCCK ANGLE (DEG)	KG KW THRUST FHASE CONF RATE (REG/SFC)	EPHENE TARGET THRUST CLCCK	RIS ECD' BODY PHASE RATE /SEC1-	Y ENCKE	X The state age
CAY	S FFC	P LAUNCH-	567.CGMCC 26.49870 THPUST PHASE DURATION	DOG DOG TYPLST FHAS THRCTTLING		ASE C PASS- LAELE HASE GLE	7 1493.44201936 16.67987938 THRUST PHASE CLCCK ANGLE	KG KH THRUST FHASE CONF FATE	EPHENE TARGET THRUST CLCCK	RIS ECD BODY PHASE RATE	Y ENCKE	
CAY DAY	S FFC	P LAUNCH- H CUTCEF- TIVE STATE	567. CONCE 26. 49870 THPUST FHASE DURATION (CAYS) 10.00000000	TPPLST FHAS THRCTTLING 1.000000	PRESENT S/I PRESENT S/I POWER AVAIL E THELST FI CCNE AN (OEG) 0 150.64001	ASE C FASS- LAELE HASE GLF	1493.44201936 16.67987938 THRLST PHASE CLCCK ANGLE (DEG) 8C.06330000	THRUST FHASE CONF FATE (REG/SFC) C.COCCOCO	EPHENE TARGET E THRUST CLCCK (FEG. 0 0.00	PHASE RATE VSECH-	Y ENCKE	
CAY	S FFC	P LAUNCH- H GUTGFF- TIVE-STATE PCSITION	567. CGCC 26. 49870 THPUST PHASE DURATION (CAYS) 10.00000000	1.000000 1.0000000	PRESENT S/I PRESENT S/I POWER AVAIL THELST FI CCNE ANI (0EG) 150.6400I	ASE C MASS- LAELE HASE GLF 0000	7 1493.44201936 16.67987938 THRUST PHASE CLCCN ANGLE (UEG) 8C.00330000	THRUST FHASE CONF RATE (REG/SFC) C.COCCOCOC	EPHENE TARGET THRUST CECCK CECCK COCO	RIS ECD' BODY PHASE RATE /SECH- DODGCC	A EVCKE	
CAY DAY	S FFC	P LAUNCH- H CUTCEF- TIVE STATE	567. CGCC 26. 49870 THPUST PHASE DURATION (CAYS) 10.00000000	TPPLST FHAS THRCTTLING 1.000000	PRESENT S/I PRESENT S/I POWER AVAIL THELST FI CCNE ANI (0EG) 150.6400I	ASE C FASS- LAELE HASE GLF	7 1493.44201936 16.67987938 THRUST PHASE CLCCN ANGLE (UEG) 8C.00330000	THRUST FHASE CONF FATE (REG/SFC) C.COCCOCO	EPHENE TARGET THRUST CECCK CECCK COCO	RIS ECD BODY FHASE RATE /SEC) 000000	Y ENCKE	3E+09
CAY DAY	S FFC	P LAUNCH- H GUTGFF- TIVE-STATE PCSITION	567.CGCC 26.49870 THPUST PHASE DURATICN (CDVS) 10.00000000 S	1.000000 1.0000000	CONTECL FHI PRESENT S/I POWER AVAIL E THELST FI CCNE AN (DEG) 0 150.64001	ASE C MASS- LAELE HASE GLF 0000	1493.44201936 16.67987938 THRLST PHASE CLCCK ANGLE (DEG) 8C.06330000	THRUST FHASE CONF RATE (REG/SFC) C.COCCOCOC	EPHENE TARGET E THRUST CECCK C.000 0 C.000 9465E+38 2309E+01	RIS ECD BODY PHASE RATE /SEC) DODOCC	Y ENCKE ENCKE ENCKE 	1E+02
CAY DAY	S FFCI S FFCI FELD	P LAUNCH- H CUTCFF- TIVE-STATE PCSITION VFLOCITY	567. CGCC 26. 49870 THPUST FHASE DURATICN (CAYS) 10.00000000 S	1.000000 1 TPFLST FHAS THECTTLING 1.000000 X	CONTECL FHI PRESENT S/I POWER AVAIL E THELST FI COME AN (OEG) 0 150.64001 .9681 .7621	ASE C MASS- LAELE HASE GLF 0000	7 1493.44201936 16.67987938 THRUST PHASE CLCCK ANGLE (DEG) 8C.0G330000	THRUST FHASE CONF FATE (REG/SFC) C.COUCOCOT 2 -32142694473 -13388624412	EPHENE TARGET E THRUST CLCCK (FEG. 0 0.00) 9465E+38 2309E+01	RIS ECD BODY PHASE RATE /SECH- 000000	Y ENCKE ENCKE ENCKE HAGNITUGE 1744661097127	3E+09 1E+02 3E+08
CAY DAY S/C SUN	S FFCI S FFCI FELA	P LAUNCH- H CUTCFF- TIVE STATE PCSITION VELOCITY FCSITICN VELCGITY	567. CGNCC 26.49870 26.49870 26.2000000 26.20000000 36.20000000	TYPLST FHAS THRCTTLING 1.000000 22f629463506+05 175f42066366+05 360432786946+05 31323058446F+02	CONTECL FHI PRESENT S/I POWER AVAIL E THRLST FI CCNE AN (DEG) 0 150.6400I .3630 .5671 .2451	ASE	7 1493.44201936 16.67987938 THRLST PHASE CLCCA ANGLE 10EG) 8C.00330000 8519E+08 574E+01 1011E+08	THEUST FHASE CONF FATE (REG/SFC) C.COUCOCO (CCOUCOCO) (CCOUCOCOCO) (CCOUCOCOCOCO) (CCOUCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOCOC	EPHENE TARGET E THRUST CECCK (FEG 0 C.001 8465E+38 2309E+01 3465E+C8 2309E+01	RIS ECD BODY PHASE RATE /SECH DIDDOCC	Y ENCKE ENCKE 17-4661097127 291763543631 5967364363664 3124441274526	3E+09 1E+02 3E+08 7E+02
CAY DAY	S FFCI S FFCI FELP	P LAUNCH- H CUTCFF- FIVE STATE PCSITION VFLOGITY FCSITICN	567. CGCC 26. 49870 THPUST PHASE DURATICN (CDVS) 10.00000000 S	926625463546+CS 360432786546+CS		ASE	7 1493.44201936 16.67987938 THRLST PHASE CLCCX ANGLE (DEG) 8C.06330000 5519E+08 574E+01	THRUST FHASE CONF FATE (REG/SFC) C.COUCOCO.	EPHENE TARGET E THRUST CECCK C.000 9465E+38 2309E+01 3465E+C8 2359E+C1	RIS ECD BODY FHASE RATE /SECH- DJBOCC	Y ENCKE ENCKE PAGNITUDE 174461097127 2917639400310 5903693030864	3E+09 1E+02 3E+08 7E+02 5E+07
CAY. DAY SCA EAR EAR	S FFCI S FFCI FELP	P LAUNCH- H CUTCFF- TIVE STATE PCSITICH VELOCITY PCSITICH VELCCITY PCSITICH VELCCITY	567. CGCC 26. 49870 THPUST PHASE DURATICN (CDVS) 10.00000000 S	TPFLST FHAS TPFLST FHAS TPFCTTLING 1.COODGCO X 92 FEESHE35DE+CS 175 F420 E636E+CS 3604327 8654E+CS 31323C50446F+CS		ASE CLE	7 1493.44201936 16.67987938 THRLST PHASE CLCCX ANGLE (DEG) 8C.06330000 5519E+08 574E+01	KG KH THRUST FHASE CONF FATE (REG/SFC) C.COUCOCOT132886244121328862441225111871765	EPHENE TARGET E THRUST CECCK C.000 9465E+38 2309E+01 3465E+C8 2359E+C1	RIS ECD BODY FHASE RATE /SECH- DJBOCC	Y ENCKE ENCKE 1744661097127 2917635430310 5903692037064 2124441274526 824616066417153	3E+09 1E+02 3E+08 7E+02 5E+07
CAY DAY SUN EAR ENS	S FFCI S FRCI FELA	P LAUNCH- H CUTCFF- TIVE STATE PCSITICH VELCGITY PCSITICH VELCGITY PCSITICH VELCGITY LEGATIONS	567. CGNCC 26. 49870 26. 49870 26. 49871 26. 4	TPFLST FHAS THRCTTLING 1.COODGCD 1.COODGCD 22F62S4635BE+CS 17574206636E+CS 36043278654E+CS 31323C58446F+CS 90538364353E+C7 15366112220E+C1		ASE G.F. ASE	7 1493.44201936 16.67987938 THRLST PHASE CLCCK ANGLE (DEG) 8C.06338000 8519E+08 8574E+01 0011E+08 0041E+02	KG KH THRUST FHASE CONF RATE CONF RATE (REG/SFC) C.COUCDCDC3C14269447313288624412132886244122S111871765 .14288472108	EPHENE TARGET E THRUST CECCK C.000 B465E+J8 2309E+01 B465E+C8 2309E+01 E473E+C7 B106E+01	RIS ECD BODY PHASE RATE /SECH- DJBOCC	Y ENCKE ENCKE 174461097127 2517635430310 5503632030864 3124441274528 8346161684455 PACNITICE	3E+C9 1E+C2 3E+D8 7E+G2 5E+O7 1E+C1
CAY. DAY S/C SUN EAG ENC S/C PFI	S FFCI S FFCI FELA TH	P LAUNCH- H CUTCFF- TIVE STATE PCSITICN VELOCITY PCSITICN VELCCITY VELCCITY LEGATIONS PCCY	567. CGCC 26. 49870 THPUST PHASE DURATICN (CAYS) 10.000000000 S	TPPLST PHAS THRCTTLING 1.C0000C0 1.C0000C0 92		ASE CARECA CARE CARE CARE CARE CARE CARE C	7 1493.44201936 16.67987938 THRUST PHASE CLCCX ANGLE (DEG) 8C.00330000 5519E+08 574E+01 1011E+08 041E+02 .473E+47 1756E+01	KG KH THRUST FHASE CONF FATE (REG/SFC) C.COUCOCO31 -3C142694473 -13388624412 -3C142694472 -13388624412 -2S111871765 -14388472108	EPHENE TARGET E THRUSY CLCCK - (FEG 0 C.001 3465E+38 2309E+01 3465E+C8 2329E+01 5473E+07 8106E+01	RIS ECD BODY FHASE RATE /SECH DJBOCC	Y ENCKE ENCKE 174461097127 2917635430310 5903692030264 2124441274526 834616066447153 PACRITICE 43603155902	3E+09 1E+02 3E+08 7E+02 5E+07 1E+01
CAY DAY SUN EAG ENC	S FFCI S FFCI FELA TH	P LAUNCH- H CUTCFF- TIVE STATE PCSITICH VELCGITY PCSITICH VELCGITY PCSITICH VELCGITY LEGATIONS	567. CGNCC 26. 49870 THPUST FHASE DURAFICN 	TPFLST FHAS THRCTTLING 1.COODGCD 1.COODGCD 22F62S4635BE+CS 17574206636E+CS 36043278654E+CS 31323C58446F+CS 90538364353E+C7 15366112220E+C1		ASE CARECA CARE CARE CARE CARE CARE CARE C	7 1493.44201936 16.67987938 THRUST PHASE CLCCX ANGLE (DEG) 8C.00330000 1519E+08 574E+01 1011E+08 041E+02 1473E+07 7756E+01	KG KH THRUST FHASE CONF RATE CONF RATE (REG/SFC) C.COUCDCDC3C14269447313288624412132886244122S111871765 .14288472108	EPHENE TARGET E THRUST CECCK C .000 0 C.000 3465E+08 2309E+01 3485E+C8 2379E+01 5473E+07 8106E+01	FHASE RATE PSECH DODGCC	Y ENCKE ENCKE 174461097127 2517635430310 5503632030864 3124441274528 8346161684455 PACNITICE	3E+CS 1E+CS 3E+GR 7E+G2 5E+O7 1E+C1 1E-OS 4E-89

	سيداللول وفرايد المبساءة		CONTPOL PEA	PSE CHANGE	4### un sau	★ 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2		-
ULIAN CATE	2444532.65476000		CONTROL FLASE	· ·		PRIFARY BCD	Y SiN	
			FRESENT SIG PASS-					
LVS FECH CUTCEF-			FOWER AVAILABLE					
TO PACE COLLEGE	16.4361000		LONER WANTEMETER	24.03123143	KH	TARGET BODY	FRURE	
	TERUST CHACE	TURNET BURGE		TURBET CHACE	THEORY CLASE	THOUST CHAS	-	
	DURATION				CONE RATE	CLCCK RATE		
	(DAYS)	inscitette	(DEG)	(DEG)	(CEG/SEC)	(CEG/SFC)		
		. 4 60000677						
					0.00000000			
C RELATIVE STATE	•	y	•		Z		PAGNITUES	
				E765100			15467574448573E+05	
VELCCITY		4633626E+[2	.10397080044		22£9644661659		327644274248936403	
VICCUIT		40356205762	***********	13725101	554 3044001633/	11.401	*************	
RTH-FCSITICH		3531876F+68-		7446F+08	28628610954429	3F & 118	44641982113635E+88	
VELCCITY		445254 RE+ C2	251754256[0		22096446%1659!		.31168985546899E+02	
*, = 0 0 3 7 3	-1(245)0				* FEF 30440% TE33:	J L 7 J A	1011003633468356468	- 4
CKE SCRIFTCH		A136110, 477		1824E407	17564C6G47714	! E & C ?	.475154359346788+67	
VELCCITY		3168007E+C1	.23926184839		.12994753543935		.381396286396586+01	
********	************	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	**************		*****************		TOTAL SECTE CONTRACTOR	•
C ACCELERATIONS.		X	<u> — ў — т</u>			,	PAGNITLUE	
IMARY BCCY	4177276	63788826-15	- 35495644776	2655-05	1026704-835862		.5547117905238CE-G5	
FTURFING FCCIFS		891535AE-10	35495544776	3126-09	1352223543827		.216561502343262-09	
sus1	-5530684	08031CAF-66		1079F-35			55586952310842E-06	
	[**********	0.		0.		7.	•••
CLIMITY PHESSURE		**************************************	CONTROL PLA	SE CHANGE	444	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	7.	••
	2444547.65478000	يسهان أأأر المالية	CCATRCL PI	SE CHANGE	4444		7.	••
LIAN CATE	2445543.6547600 587.00005310		CONTROL PLASE	SE CHANGE 9 1443-41152698		PKIPAPY BOD EFMEMERIS E	CCY ENCKE	••
LIAN CATE	2445543.6547600 587.00005310		CCATRCL PI	SE CHANGE 9 1443-41152698		PKIPAPY BOD EFMEMERIS E	CCY ENCKE	••
LIAN CATE	2444547.65478000 587.00005000		CONTROL PHASE FRESENT S/C MASS- FOHER AVAILABLE	SE CHANGE 9 1443-41152698		PKIPAPY BOD EFMEMERIS E	CCY ENCKE	•••
LIAN CATE	2445543.65478000 587.00005300 	THEUST FHASE	CCATFCL PIA CONTECL PHASE FRESENT S/C MASS FOMER AVAILABLE THRUST PHASE	SE CHANGE 9 1443-41152698 21.00000000	KG KH THRUST FHASE	PRIPARY BOD EFHEMERIS E TARGET BODY THRUST PHAS	E ENCKE	•••
LIAN CATE	2444543.6547600 587.0006010 	THEUST FHASE	CONTROL PLASE GONTROL PHASE FRESENT SAC MASS FOMER AVAILABLE THRUST PHASE GONE ANGLE	SE CHANGE 9 1443.41152696 21.00000000	KG KH THRUST FHASE CONE RATE	PAIPARY BOD EFHEHERIS E TARGET BODY THRUST PHAS CLOCK RATE	E ENCKE	
LIAN CATE	2444547.65478000 587.000003000 6.45870000 THPUST FHASE GURATION	THRUST FHASE THROTTLING	CONTROL PHASE FRESENT S/C MASS FOHER AVAILABLE THRUST PHASE COME PAGLE	SE CHANGE 1443.41152696 21.00000000 THRUST FHASE CLCCK ANGLE— (DEG)	KG KH THRUST PHASE CONE RATE (LEG/SEC)	PRIMARY BOD EFHERERIS E TARGET BODY THRUST PHAS CLOCK RATE (CEG/SEC)	E ENCKE	
LIAN CATE YS FRCP LAUACH-	2444543.6547600 587.0006010 	THRUST FHASE THROTTLING	CONTROL PLASE GONTROL PHASE FRESENT SAC MASS FOMER AVAILABLE THRUST PHASE GONE ANGLE	SE CHANGE 9 1443.41152696 21.00000000	KG KH THRUST FHASE CONE RATE	PAIPARY BOD EFHEHERIS E TARGET BODY THRUST PHAS CLOCK RATE	E ENCKE	
LIAN CATE YS FECH CUTCEF	2444543.65476000 587.00000300 	THRUST FHASE THROTTLING	CONTROL PHASE FRESENT S/C MASS FOHER AVAILABLE THRUST PHASE COME PAGLE	SE CHANGE 1443.41152696 21.00000000 THRUST FHASE CLCCK ANGLE— (DEG)	KG KH THRUST PHASE CONE RATE (LEG/SEC)	PRIMARY BOD EFHERERIS E TARGET BODY THRUST PHAS CLOCK RATE (CEG/SEC)	E ENCKE	
C PELETIVE STATE	2444543.65476000 587.00000000 	THRUST FHASE THROTTLING G.RCCCOOCE	CCATRCL PLASE CONTRCL PHASE FRESENT S/C MASS FOMER AVAILABLE THRUST PHASE COME PAGLE (DEG) C. DOCCCOCC	SE CHANGE 9 1443.41152696 21.00000000 THRUST FHASE CLCCK ANGLE— (DEG) 0.0000000	KG KH THRUST PHASE CONE RATE (LEG/SEC) C.OCCCOGOC	PRIPARY BOD EFHEHERIS E TARGET BODY THRUST PHAS CLOCK RATE (CEG/SEC) C.0036300	E ENCKE	
C PELATIVE STATE	2444547.65476000 587.000000000 6.45870000 THPUST PHASE 	THRUST FHASE THROTTLING G.3CCCCCCC X 77454849F+C8	CCATRCL PIASE FRESENT S/C MASS- FOHER AVAILABLE- THRUST PHASE COME PAGLE (DEG) C.DOCCCOCC	95E CHANGE 1443-41152658 21-00000000 THRUST FHASE CLCCK ANGLE— (DEG) 0-00000000	KG THAUST PHASE CONE RATE (DEG/SEC) G.OCCCCGGC	PRIPARY BOD EFHEMERIS E TARGET BODY THRUST PHAS CLOCK RATE (CEG/SEC) C.0036300	CCY ENCKE	
C PELETIVE STATE	2444547.65476000 587.000000000 6.45870000 THPUST PHASE 	THRUST FHASE THROTTLING G.RCCCOOCE	CCATRCL PIASE FRESENT S/C MASS- FOHER AVAILABLE- THRUST PHASE COME PAGLE (DEG) C.DOCCCOCC	95E CHANGE 1443-41152658 21-00000000 THRUST FHASE CLCCK ANGLE— (DEG) 0-00000000	KG KH THRUST PHASE CONE RATE (LEG/SEC) C.OCCCOGOC	PRIPARY BOD EFHEMERIS E TARGET BODY THRUST PHAS CLOCK RATE (CEG/SEC) C.0036300	E ENCKE	
C PELATIVE STATE POSITION UELCOTTY	2444543.65476000 587.00026300 	THRUST FHASE THROTTLING G.OCCCOOLE X 7454849F+C8 5674564E+C2	CCATRCL PIASE CONTRCL PHASE FRESENT SAC MASS- FOMER AVAILABLE— THRUST PHASE COME ANGLE 10EG) C.00CCCOCC Y .582298C2945	SE CHANGE 9 1443.41152698 21.00000000 THRUST FHASE CLCCK ANGLE— (DEG) 0.0000000	KG KH THRUST PHASE CONE RATE (DEG/SEC) C.OCCCGGC 7 .26231742403291	PRIPARY BOD EFHEHERIS E TARGET BODY THRUST PHAS CLOCK RATE (DEG/SEC) C.003G000	- 1377191635511E+05	
C PELETIVE STATE C PELETIVE S	2444543.65476000 587.00020000 5.49870000 THPUST FHASE GURATION (CAYS) 213.00000000	THRUST FHASE THROTTLING G.3CCCCOCC X 7454849F+C8 5674564E+C8	CCATRCL PIASE FRESENT S/C MASS- FOMER AVAILABLE- THRUST PHASE COME MAGLE (DEG) C.00CCCOCC Y SEZZ98CZS45 -70402766651	SE CHANGE 1443.41152698 21.00000000 THRUST FHASE CLCCK ANGLE— (0EG) 0.00000000	KG	PRIPARY BOD EFHEHERIS E TARGET BODY THRUST PHAS CLOCK RATE (CEG/SEC) G.0036300	CCY ENCKE E MAGNITUCE .1371926055511E+09 .372858306427655602	
C PELETTVE STATE OF PELETTVE ST	2444543.65476000 587.00020000 5.49870000 THPUST FHASE GURATION (CAYS) 213.00000000	THRUST FHASE THROTTLING G.OCCCOOLE X 7454849F+C8 5674564E+C2	CCATRCL PIASE CONTRCL PHASE FRESENT SAC MASS- FOMER AVAILABLE— THRUST PHASE COME ANGLE 10EG) C.00CCCOCC Y .582298C2945	SE CHANGE 1443.41152698 21.00000000 THRUST FHASE CLCCK ANGLE— (0EG) 0.00000000	KG KH THRUST PHASE CONE RATE (DEG/SEC) C.OCCCGGC 7 .26231742403291	PRIPARY BOD EFHEHERIS E TARGET BODY THRUST PHAS CLOCK RATE (CEG/SEC) G.0036300	- 1377191635511E+05	
C PELETTYE STATE PC PELETTYE STATE PC PELETTYE STATE PCSTICH VELOGITY VELOGITY	2444543.65476009 587.00026300	THRUST FHASE THROTTLING G.OCCCOCC X 7454849F+C8 5674564F+C8 6631C481E+C8	CCNTRCL PIASE FRESENT SAC MASS. FOMER AVAILABLE. THRUST PHASE GCNE MAGLE 10EG) C.00CCCCCC SEZ296C3457 -70402766651 -26470463126	#SE CHANGE 1443-41152658 21.00000000 THRUST PHASE CLCCK ANGLE— (DEG) 0.0000000 E145E208 7012E+01 1464E+07 E567E202	KG THFLST PHASE CONE RATE (LEG/SEC) C.OCCCOCCC 26231742403221 3416884209C026	PRIPARY BOD EFHEMERIS E TARGET BODY THRUST PHAS CLOCK RATE (CEG/SEC) C.003G000	### ENCKE ###################################	
C PELATIVE STATE IN POSITION VELOCITY VELOCITY VELOCITY VELOCITY VELOCITY	244543.65476000 587.00020000 6.49870000 THPUST FHASE GLEATION (CAYS) 213.000000000000000000000000000000000000	THRUST FHASE THROTTLING G.3CCCCOCC X 7454849F+C8 35674564E+C2 E31C481E+C8 4856167E+C2	CCATRCL PIASE	SE CHANGE 9 1443.41152696 21.000000000 THRUST FHASE CLCCK ANGLE— (DEG) 0.00000000 51456968 70126+01 14646+67 55676+02	KG KH THALST FHASE CONE RATE (DEG/SEC) C.OCCCOCC 7 .26231742403221 .3406842090020 .26231742463221 .3406842090020	PAIPAPY BOD EFHEHERIS E TARGET BODY THRUST PHAS CLOCK RATE (CEG/SEC) C.003GDD C.003GDD CE+D8 DE+D1	CCY ENCKE E ********************************	
C PELATIVE STATE IN POSITION VELOCITY VELOCITY VELOCITY VELOCITY VELOCITY	244543.65476000 587.00020000 6.49870000 THPUST FHASE GLEATION (CAYS) 213.000000000000000000000000000000000000	THRUST FHASE THROTTLING G.3CCCCOCC X 7454849F+C8 35674564E+C2 E31C481E+C8 4856167E+C2	CCNTRCL PIASE FRESENT SAC MASS. FOMER AVAILABLE. THRUST PHASE GCNE MAGLE 10EG) C.00CCCCCC SEZ296C3457 -70402766651 -26470463126	SE CHANGE 9 1443.41152696 21.000000000 THRUST FHASE CLCCK ANGLE— (DEG) 0.00000000 51456968 70126+01 14646+67 55676+02	KG KH THALST FHASE CONE RATE (DEG/SEC) C.OCCCOCC 7 .26231742403221 .3406842090020 .26231742463221 .3406842090020	PAIPAPY BOD EFHEHERIS E TARGET BODY THRUST PHAS CLOCK RATE (CEG/SEC) C.003GDD C.003GDD CE+D8 DE+D1	### ENCKE ###################################	
C PELSTIVE STATE TO PELSTIVE STATE TO PELSTIVE STATE TO PELSTICH VELOCITY TO PESTICH VELOCITY TO PESTICH VELOCITY	2444543.65476009 587.0000000 6.45870000 THPUST FHASE GURATION (CAYS) 213.CCOCGOCC .AE30652370028331896431216935	THRUST FHBSE THROTTLING G.OCCCOCC X 7454849F+C8 3674564E+C2 ESJIC481E+C2 485C1C7E+C2 57342672E+07 55921776E+C1	CCNTRCL PIASE GONTRCL PHASE FRESENT SAC MASS. FOMER AVAILABLE. THRUST PHASE GONE MAGLE 10EG) C.00CCCCCC SEZ296C3457 .70402766651 .26470462126 112025(A821 .19325803697	### CHANGE 1443-41152658 21.00000000 THRUST PHASE CLCCK ANGLE (DEG) 0.0000000 E145E+08 P012E+01 1464E+07 E567E+02 149E+07 7624E+01	KG KH THAUST PHASE CONE RATE (LEG/SEC) C.OCCCGGGC .26231742403229 .3446884209C026 .2623174246322 .3446884209C026	PAIPAPY BOD EFHEHERIS E TARGET BODY THRUST PHAS CLOCK RATE (CEG/SEC) C.003GDD C.003GDD CE+D8 DE+D1	######################################	
C PELATIVE STATE OF PELATIVE ST	2444543.65476009 587.00026300	THRUST FHASE THROTTLING G.OCCCOOCE X 7454849F+C8 455454E+C2 E31C481E+C8 4856167E+C2 7342672E+07 5921776E+C1	CCATRCL PI A CONTRCL PHASE FRESENT S/C MASS- FOMER AVAILABLE THRUST PHASE COME ANGLE (DEG) C.00CCGOCC	SE CHANGE 9 1443.41152698 21.00000000 THRUST FHASE CLCCK ANGLE— (DEG) 0.0000000 E145E+08 7012E+07 76967E+07 7624E+01	KG KH THRUST FHASE CCNE RATE (CEG/SEC) C.OCCCGGGC 26231742403221 -34164842090020 .26231742463221 -34468842090020 .26231742463221 -34468842090020	PRIPARY BOD EFHEHERIS E TARGET BODY THRUST PHAS CLOCK RATE (DEG/SEC) C.003G300 LE+C8 DE+01 LE+C8 DE+01 SE+01	######################################	
C PELATIVE STATE IN POSITION VELOGITY ICHE POSITION VELOGITY	2444543.65476000 587.06026000 5.45876000 THPUST FHASE GURATION (CAYS) 213.00000000 8530652 3700283 12169359 12169359	THRUST FHASE THROTTLING G.JCCCCOCC X 7454849F+C8 5674564E+C2 E31C481E+C8 485C1C7E+C2 7342672E+97 5921776E+C1	CCATRCL PIASE	#SE CHANGE 1443-41152658 21-00000000 THRUST FHASE -CLCCK ANGLE— -(006) -0.0000000 E145E+08 7012E+01 1464E+07 F567E+02 1449E+07 7624E+01	KG THAUST PHASE CONE RATE (DEG/SEC) C.00CC300C 7 .26231742403221 .3416884209C026 .26231742453221 .3446884209C026 .26231742453221 .3446884209C026	Phipary Bod EFHEMERIS E TARGET BODY THRUST PHAS CLOCK RATE (CEG/SEC) C.003G000 LE+C8 DE+O1 LE+C8 DE+O1 DE+O1	######################################	
AVS FECH LAUNCH- RYS FREM CUTEFF- VC PELITIVE STATE UN POSITION VELOCITY WELGOTTY VELOCITY VELOCITY VELOCITY	2444543.65476000 587.06026000 5.45876000 THPUST FHASE GURATION (CAYS) 213.00000000 8530652 3700283 12169359 12169359	THRUST FHASE THROTTLING G.OCCCOOCE X 7454849F+C8 455454E+C2 E31C481E+C8 4856167E+C2 7342672E+07 5921776E+C1	CCATRCL PI A CONTRCL PHASE FRESENT S/C MASS- FOMER AVAILABLE THRUST PHASE COME ANGLE (DEG) C.00CCGOCC	#SE CHANGE 1443-41152658 21-00000000 THRUST FHASE CLOCK ANGLE (006) 0-00000000 E145E+08 7012E+01 1464E+07 7624E+01	KG KH THRUST FHASE CCNE RATE (CEG/SEC) C.OCCCGGGC 26231742403221 -34164842090020 .26231742463221 -34468842090020 .26231742463221 -34468842090020	Phipary Bod EFHEMERIS E TARGET BODY THRUST PHAS CLOCK RATE (DEG/SEC) C.0036300 (E+08 0E+01 LE+08 0E+01 LE+08 0E+01	######################################	

IJ

JULIAN DATE 244456 DAYS FECH LAUNCH 593 DAYS FECH CUTCEF- (CCNTRCL FHASE +- PRESENT S/C F/SS- 1 FONER AVAILABLE	9 1443.41152698 21.00000000		PRIMARY BO EPHEMERIS TARGET EOD	BCCY ENCKE	·
SIG RELATIVE CTATES	x					MAGAITLE	
SUN FESTTICN	.6374351277FC80E+C8	.95521949G18			937708E+08	.1173311941192EE	
VELCCITY	39841303406266E+C2	678838254120			658335E+01	*4CE51140767642E	
	 	and the second of the second 					
EARTH POSITION	42184139763023£+C8	819689953366			9377C8E+C8	.49250601599998	
VELCCITY	185144809473486+62	279643352984	+39E+02	43707723	658335E+01	.33 £21497668CCSE	+02
ENCKE POSITION	56696348539659F+C5	538402565617	745F+65		531504E+05	.82539262797174E	A D E
VELCCITY	.205354514695216+61	.18790962897			338359E+01	.30078975923535E	
PAR ACCESTORATIONS							
S/C ACCELERATIONS PRIPARY BCDY	X 52372987505530E-G5	- 75100507100	2435: 55	4676006		PAGNITUSE	
PERTUREINE ROCIES		784828074983 			679701E+05	.96401734011859E	
THRUST	0.	C.	+ ************************************	0.	31-33336=10	153 45342232733E -0.	
RADIATION FRESTURE	0.	G.		0.		č.	
	سئن ارها والجار والإنجاز والمنافذ الخراد	and the state of t					
PRI CONTRACTOR CONTRAC							
		ا این این این این این این این این این است. میشونیت در دید این این این این این این این است.				·	
.1426FER73476F+C1	.358013674148E+90	.134351367239E+00	.678350275	883E+C7	1151633427096+07	.350992959778E+	06
.489172F74465F+00	.973666187801E+00	.1050C0C4044CE+C0	.127261772		599426864869E+87	.27652F644654E+	
	516788986810E-01	E817E74E7901E+00 -			217047249637E+C6-	567811705885E+	
.18045.203806E-06	. 221056958752E-0#	.680449532884E-07	.146163519		5185138993085+00	.26078952C8CCE+	
.2959591894936-96	.6752921813C6E-07	.692029741875E-07	.104880928		132762433087E+01	.264992619586E+	
.63554+3656436-07	5408 65607 E63E-07-	135094728534E - G6			2510280856525+00-	4-241+766056E+	
ration of the Control							
14.E 18		-					
E7 E4 C 8 9 9 7 C C 1 F + C 7	.522735734722E+0E	.22494051257CE+06	397088980	217F+05			
	485252445E14E+96	471707404148E+G6					
73485 C766195E + C6	+.452334578766£+07	.778298529529E+05	.136166097				
1753566384F8E+C1	.690324977617E-01	.219467930446E+GO	386313971				
		4745 (6450436E+08-	328364564				
28354F£11676E+CG	853828580387E+00	.742152867018E-01	.132753364				
				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
يوار أرائها الرياسية المهارات فتتعلق المستعلق					· <u>·</u>		
	*********	+++++++ TERMINATION	DATA ++++++	********	**********		***
ECUESTED STOFFING CONDITT	ON S YEND						
CTUAL STOPPING CONDITION	: TEND		****				
-0.000	•						
والمستوهد المؤلفهميل أيداره أالمواجي الا	غ الراب <u>المستحد المستحد المستحد</u>			·			
	000ECCE+03						
FINAL S/C P/SS .14434115	269766E+04						
		· •	• •	·	and managers of the same of		
. =56656348589659E+C5	V) = .20535451460	921E+01 50T = .	. 144621344348	#FF+04 EC	A = .427137892	E B T B L S A B L	
=534462965817456+45			401909748624				
E =27674703531664F+65	VZ = .1[3991113]8		300789759235		A = .7174J1694		
= .£2939262797174E+G5	V = .30074975923		593817418069		CA = .593817418		
Company of the South South South				***************************************			
CAIC ELEVENTS A	E F-09 #386451E+14	INC NCC .717402E+62 2302		APS	MA	TA	
VC TAPGET CENT110528			2256+03 .6	64801E+82	749393E+15 .:	2729526+93	

	C*EU = - G. 0.
	LCLC = .17543220000CE+03 .27253CCCCCCE+03 .16500C000CPE+03 .7759CCGOC000E+02
	UNEN =
	• P1 = 7. 2. (1. (1. (1. (1. (1. (1. (1. (1. (1. (1
	F2 * C. Q. Q. Q. Q.
ORIGINAL	-f1f2 = 0,
46	
2日	SERSITIVITY MATEIX
POOR L	110055640078E+06 .912352950190E+04 .392595256546E+04693051012817E+03 .7174257218325E+05 .759658832662C+04823284730842E+04 .595254739957E+02
PAGE IS	1282555665435+C58C6926064589E+D5 .135838719037E+D4 .23765467318CE+D4
AG	1E+CE .9E+04 .4E+047F+G3
日田	.ZE+CS .8E+348E+34 .EE+821E+C51E+C51E+C4 .ZE+C4
国国	•
	A transferring transferring to the control of the c

: CF2 = .4CC00C00CC00E-01

SUPPARY FOR ITERATION NUMBER O

F = -.144241152698E+44

CU1 # C.

	247E+0719854E+C 585E+C717053E+G 515E+06 .66083E+C	\$					
CONTROL VECTOR INNER PROCESTS					•		
1	.57658 .00076		•				Ģ
THE FOLICHING CONTROLS ARE LINEAPLY							
				•			
	•						
				•			
				• 1 1			
							
and the second s	ساستهم منع درو والراسطين والما						•

1

Light Control of the state of the state of the state of

ege v tage grand telepterineren olar holete met periodagne bed i dattrette indepteriode i de jariba. A

A to or going?

		**************************************	TAL TRAIL TM	#4####################################	********		* * * * * * * *	* * * * * * *	
*****************		******	*********		*******	*******		******	• • •
							•		
.139432000C00E+C3	.27253000000	0E+03 .16500						:	
ELTA U		run dat marius and specific per 1 2 1			and company of the contraction o			. 0	
	7 [526249325	2E-0117063	!75733 9 6E+01—	54399818389	:0E-C1				
FGUFSTEC STCFFING CONCIT	TON . TENB						*********	*********	
CIVAL STORETHE CONCILION-	TEND	The second secon		····					
LIGHT TIME			**************************************						
#452<593473863FF+05 #43913C08435726E+35 #22086215329170E+05	VY = .1894	3421C14647E+G1 7G378327G2F+01	908 = - VHP = -	.3016258173603	E+04 VC E+01 IC	A = .50 $A = .75$	162081736031E+ 612697746814E+	01 02	
* .EE255355E3A2C3E+05	V = -3016	5061/36031F+01	TSOI =	.59375263162616	E+03 TR	CA = .59	3752631F2616E+	13	
CHIC ELFHENTS A	.	TNC	NG	DE	ies	KA			·
CHIC ELFHENTS A	CE-C9 .29739C	INC E+14 .756127	- NG E+C2 - 228	DE	1PS	HA	TA	•33	141
CHIC ELFHENTS A	CE-C9 .29739C	INC E+14 .756127	- NG E+C2 - 228	DE	1PS	HA	TA	•33	122
GNIC ELFHENTS	CE-C9 .29739C	INC E+14 .756127	- NG E+C2 - 228	DE	1PS	HA	TA	•33	ř.e.e.
CHIC ELFHENTS A	CE-C9 .29739C	INC E+14 .756127	- NG E+C2 - 228	DE	1PS	HA	TA	•33	
GNIC ELFHENTS	CE-C9 .29739C	INC E+14 .756127	- NG E+C2 - 228	DE	1PS	HA	TA	•33	
CHIC ELFHENTS A	CE-C9 .29739C	INC E+14 .756127	- NG E+C2 - 228	DE	1PS	HA	TA	•33	
CNIC ELFHENTS A	CE-C9 .29739C	INC E+14 .756127	- NG E+C2 - 228	DE	1PS	HA	TA	•33	
CHIC ELFHENTS A	CE-C9 .29739C	INC E+14 .756127	- NG E+C2 - 228	DE	1PS	HA	TA	•33	
# .EE25535EE372C3E+n5 GNIG ELFHENTS A /C TARGET CEN120592C	CE-C9 .29739C	INC E+14 .756127	- NG E+C2 - 228	DE	1PS	HA	TA	•33	

U											
-1204	32(0CCCCE+63	.272530	0000002E+03			.77590000	1000E+C2		With the same of	•	
DELTA U		Transcript delice representation	eministra in trata i naranague em				gangay — ning basaman aman bikara biranda di birin bir	Charles and the second and the seco			
							•		V		•
RECLESTED STO AGTUAL STOFFT	PETHS CONDIT	ON ; TEND				N. DATA			********		
						e se og a vog segneralen og kr				•	
	.59349#7 S .14434287				immero al apropia i più recon una		- 11-11	Transpare spines terms :	ga hading at rather 1,1 had to		
x = .459500 y = .253210 z = .265442	266996985+C4 286963645+04 866671691+94	VY =	.195782793	84419E+01 83921E+01	PDR = -	.105399995362 .904693707869 .30550997388	256+04 1536+02 1046+01	ICA =	05519973019 24351912269	G7E+01	
# # .459500 # # .253210 # .252420 #582511 #582511 ## COMPANDED TO THE TO	266996967+C4 985963646+04 866671696+94 366619686+04 C-16713	VY = VZ = V = V = V = V = V = V = V = V =	.195782793 .114047638 .305509973 E	E4419E+01 23921C+01 01905E+01 	FOR = - VHP = TSOI = - NO + C2 320	.105399995362 .904693707889 .305509973019 .593476598848	29E+04 953E+02 904E+01 909E+03 	ICA = .: ICA = .: IFCA = .: 	75549973019 24351912269 93476998848 +14 .795	76+01 6CE+02	
# .459500 # .253210 # .25242 # .582511 # .582511 # .582511	266996967+C4 985963646+04 866671696+94 366619686+04 C-16713	VY = VZ = V = V = V = V = V = V = V = V =	.195782793 .114047638 .305509973 E	E4419E+01 23921C+01 01905E+01 	FOR = - VHP = TSOI = - NO + C2 320	.105399995362 .904693707889 .305509973019 .593476598848	29E+04 953E+02 904E+01 909E+03 	ICA = .: ICA = .: IFCA = .: 	75549973019 24351912269 93476998848 +14 .795	76+01 6CE+02	****
# .45950 # .253210 # .252542 # .582511 GOAIG ELEMFAN BOAIG ELEMFAN	266996967+C4 985963646+04 866671696+94 366619686+04 C-16713	VY = VZ = V = V = V = V = V = V = V = V =	.195782793 .114047638 .305509973 E	E4419E+01 23921E+01 01905E+01 INC .224352E	FOR = - VHP = TSOI = - NO + C2 320	.105399995362 .904693707889 .305509973019 .593476598848	29E+04 953E+02 904E+01 909E+03 	ICA = .: ICA = .: IFCA = .: 	75549973019 24351912269 93476998848 +14 .795	76+01 6CE+02	
# .459500 # .253210 # .265442 # .582511 GONIG ELEMFAN	266996967+C4 985963646+04 866671696+94 366619686+04 C-16713	VY = VZ = V = V = V = V = V = V = V = V =	.195782793 .114047638 .305509973 E	E4419E+01 23921E+01 01905E+01 INC .224352E	FOR = - VHP = TSOI = - NO + C2 320	.105399995362 .904693707889 .305509973019 .593476598848	29E+04 953E+02 904E+01 909E+03 	ICA = .: ICA = .: IFCA = .: 	75549973019 24351912269 93476998848 +14 .795	76+01 6CE+02	
# .45950 # .253210 # .205042 # .582511 GOAIG ELEMFAN BOAIG TARGET CE	266996967+C4 985963646+04 866671696+94 366619686+04 C-16713	VY = VZ = V = V = V = V = V = V = V = V =	.195782793 .114047638 .305509973 E	E4419E+01 23921E+01 01905E+01 INC .224352E	FOR = - VHP = TSOI = - NO + C2 320	.105399995362 .904693707889 .305509973019 .593476598848	29E+04 953E+02 904E+01 909E+03 	ICA = .: ICA = .: IFCA = .: 	75549973019 24351912269 93476998848 +14 .795	76+01 6CE+02	
# .45950 # .253210 # .205042 # .582511 GOAIG ELEMFAN BOAIG TARGET CE	266996967+C4 985963646+04 866671696+94 366619686+04 C-16713	VY = VZ =	.195782793 .114047638 .305509973 E	E4419E+01 23921E+01 01905E+01 INC .224352E	FOR = - VHP = TSOI = - NO + C2 320	.105399995362 .904693707889 .305509973019 .593476598848	29E+04 953E+02 904E+01 909E+03 	ICA = .: ICA = .: IFCA = .: 	75549973019 24351912269 93476998848 +14 .795	76+01 6CE+02	
# = .459500 # = .253210 Z = .205442 R = .582511 CONIC ELEMENT S/C TARGET CE	266996967+C4 985963646+04 866671696+94 366619686+04 C-16713	VY = VZ =	.195782793 .114047638 .305509973 E	E4419E+01 23921E+01 01905E+01 INC .224352E	FOR = - VHP = TSOI = - NO + C2 320	.105399995362 .904693707889 .305509973019 .593476598848	29E+04 953E+02 904E+01 909E+03 	ICA = .: ICA = .: IFCA = .: 	75549973019 24351912269 93476998848 +14 .795	76+01 6CE+02	

_ U								•		
-13C432600C0CE+03	.27253C000CC0E+0	3 .165(000	100000E+0:	.775900600	000E+02					
DELTA U	24116679525#F+0	E	15387CF+011	263105177	0365+00					

RECUESTED STOFFING CONDITT ACTUAL STOFFING-CONDITION-	OK ! TEND									
									*	
FLIGHT TIME		· · · · · · · · · · · · · · · · · · ·	الروسد المعلى المختص العداد الكويت			•			THE STATE OF THE S	
Y = .5771176C7116772+03 Z = .1CC996472644816+04	VY = .19F51613 - VZ = .11403880	183518E+01 775700F+01	ect = . BOR =	365333617733	6GE+03 13E+02 25E+01	VCA =	.305333617	73328E+01 80658E+02-		
Y = .5771176C711F77E+03 Z = .1CC59647264481E+04 .R = .27976606794255F+04 CONTO ELEMENTSA	VY = .19F51613 VZ = .11403880 V = .30533361	183516E+01 775700F+01 773326E+01	80R = VHF = . TSOI = .	961909046815 310911876103 365333617733 593489771860	6GE+03 13E+02 25E+01 99E+03	VCA = ICA = IRCA =	.305333617 .220051251 .593488742	733286+01 806586+02- 340926+03	·	
Y = .5771176C711F7°E+03 2 = .1CC59E47264481E+54 R = .27976E0E794255F+C4 GONIG ELEMENTSA 5/C TAPCET CENT ~.1C7263	VY = .19F51613 VZ = .11403880 V = .30533361 	183516E+01 775700F+01 773326E+01 TNC .220051E+	BOR = VHF = . TSOI = .	961909046815 310911876103 365333617733 593489771860	60E+03 13E+02 25E+01 99E+03 APS 58742E+01	VCA = ICA = IRCA = HA	.305333617 .220051251 .593488742	73226+C1 80658E+02- 34092E+03 		
Y = .5771176C711F7°E+03 2 = .1CC59E+7264481E+54 R = .27976E0E794255F+C4 GONTG ELEMENTSA 5/C TAPCET CENT1C7263	VY = .19F51613 VZ = .11403880 V = .30533361 	183516E+01 775700F+01 773326E+01 TNC .220051E+	BOR = VHF = . TSOI = .	961909046815 310911876103 365333617733 593489771860 E	60E+03 13E+02 25E+01 99E+03 APS 58742E+01	VCA = ICA = IRCA = HA	.305333617 .220051251 .593488742	73226+C1 80658E+02- 34092E+03 		
Y = .5771176C711F7°E+03 2 = .1CC59E+7264481E+54 R = .27976E0E794255F+C4 CONTO ELEMENTSA S/C TAPCET CENT1C7263	VY = .19F51613 VZ = .11403880 V = .30533361 	183516E+01 775700F+01 773326E+01 TNC .220051E+	BOR = VHF = . TSOI = .	961909046815 310911876103 365333617733 593489771860 E	60E+03 13E+02 25E+01 99E+03 APS 58742E+01	VCA = ICA = IRCA = HA	.305333617 .220051251 .593488742	73226+C1 80658E+02- 34092E+03 		
Y = .5771176C711F77E+03 Z = .1CC59EL7264481E+C4 R = .27976E0EF94255F+C4 CONIC ELEMENYS A- S/C TAPCET CENT1C7263	VY = .19F51613 V = .11403880 V = .30533361 F-09 .8572436+13	183516E+01 775700F+01 773326E+01 TNC .220051E+	BOR = VHF = . TSOI = .	961909046815 310911876103 365333617733 593489771860 E	60E+03 13E+02 25E+01 99E+03 APS 58742E+01	VCA = ICA = IRCA = HA	.305333617 .220051251 .593488742	73226+C1 80658E+02- 34092E+03 		
Y = .5771176C711F77E+03 Z = .1CC59EL7264481E+C4 R = .27976E0EF94255F+C4 CONIC ELEMENYS A- S/C TAPCET CENT1C7263	VY = .19F51613 V = .11403880 V = .30533361 F-09 .8572436+13	183516E+01 775700F+01 773326E+01 TNC .220051E+	BOR = VHF = . TSOI = .	961909046815 310911876103 365333617733 593489771860 E	60E+03 13E+02 25E+01 99E+03 APS 58742E+01	VCA = ICA = IRCA = HA	.305333617 .220051251 .593488742	73226+C1 80658E+02- 34092E+03 		
Y = .5771176C711F77E+03 Z = .1CC59EL7264481E+C4 R = .27976E0EF94255F+C4 CONIC ELEMENYS A- S/C TAPCET CENT1C7263	VY = .19F51613 V = .11403880 V = .30533361 F-09 .8572436+13	183516E+01 775700F+01 773326E+01 TNC .220051E+	BOR = VHF = . TSOI = .	961909046815 310911876103 365333617733 593489771860 E	60E+03 13E+02 25E+01 99E+03 APS 58742E+01	VCA = ICA = IRCA = HA	.305333617 .220051251 .593488742	73226+C1 80658E+02- 34092E+03 		
Y = .5771176C711F77E+03 Z = .1CC59EL7264481E+04 R = .2797EE0EF94255F+04 	VY = .19F51613 V = .11403880 V = .30533361 F-09 .8572436+13	183516E+01 775700F+01 773326E+01 TNC .220051E+	BOR = VHF = . TSOI = .	961909046815 310911876103 365333617733 593489771860 E	60E+03 13E+02 25E+01 99E+03 APS 58742E+01	VCA = ICA = IRCA = HA	.305333617 .220051251 .593488742	73226+C1 80658E+02- 34092E+03 		
Y = .5771176C711F77E+03 Z = .1CC59EL7264481E+04 .R = .2797EE0EF94255F+04 	VY = .19F51613 VZ = .11403880 V = .30533361 	183516E+01 775700F+01 773326E+01 TNC .220051E+	BOR = VHF = . TSOI = .	961909046815 310911876103 365333617733 593489771860 E	60E+03 13E+02 25E+01 99E+03 APS 58742E+01	VCA = ICA = IRCA = HA	.305333617 .220051251 .593488742	73226+C1 80658E+02- 34092E+03 		

0						
.13043000736403	.27253900000000+03	.165000000000E+0	.77590000000E+	r ž		•
DELTA U	 Negronishings a science amount per account of the second state 	anning in a material state of the state of t				
		•				•
ECLESTED STORFING CONDITION OF	N I TENC					
LIGHT 11HE	2070GE+63			•	a company and an angle and a command	•
* .257411225610446+C7 *776578168865924+G3 *26957740684368+02 * .166356206574156+04	VY = .19524993306 89980180410	6343F+01 BOR = 2541E+01 VHP	3051586531838E+0	VCA # .30!	843332465566+03 155653183626+01 867229125646+02 5500452358716+03	
GRIG ELEMENTS 10738FE		.239887E+C2	+GOE APS .2320101	E+0243C243E+:	3325888. 2	1.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4

		ilia di mandana di man				
		00				
		ORIG OF P				
		ORIGINA OF POOR				
		ORIGINAL PAGE OF POOR QUALIT				

I. TRIAL TRAJECTORY NUMBER		e. Distriction of the second desirable and the second desirable desirable desirable desirable desirable desirable	and annual to the second annual second second and second s		·
XIII. SCALE (GAMMA) CH CONTROL CO	SECTION (CO)				
X(1) NCHINAL FIRST SIEF SC	LE FACTOR		· · · · · · · · · · · · · · · · · · ·		
Y(2) TLADFATIC EXTREPLY ES Y(3) CLOIG EXTREPUB ESTIPA	TICH (THEE POINTS,	CHE SLOFE)			•
*(5) CLADFATIC EXTREMUM ESTIMA *(5) CLADFATIC EXTREMUM ES	TION (FCLR FGINTS) TIPATION (TPREE POINTS)	ga in majon. In san in ga manana ipa an an in miyayan (apan papanahili mananana M		alia da parte de la composition de la composition della composit	
THIN GUAGRATIC EFROR-INDEX (EMAG	Land Medical Springers (1940 - 1971 - 1971 - 1981 - 1981 - 1981 - 1981 - 1981 - 1981 - 1981 - 1981 - 1981 - 19				· · · · · · · · · · · · · · · · · · ·
YEX1. EXFECTED CHANGE IN GUACFATI					
COLUMN TO THE PARTY OF THE PART			<u> </u>		
그리 화는 보는 것이 없는 것이라요?					₹.
And the second s	<u> </u>	ingan yang mengangan persambah di kemendan pengangan dan kemendan pengangan bahan sebagai berasa berasa berasa Pengangan pengangan			*
X(I)	Y(1)	PREDICTED MIN			· · · · · · · · · · · · · · · · · · ·
.	.27515685253355E+07				
J SECTORACTOROGERACION	-13672776EG35G1E+G5	13353682012077E+06-	alapana - deligana ay libelia estro y comb y males o apariasto s	nang paljaganasi me arangan dawangan damangan damangan damangan damangan damangan damangan damangan damangan d	
2 .4836=3837130066+01 4 .46725363151266+01	.46285467974712E+03	251729378640E5E+C3			
5469650453759536+01	6 4		aleger p. 1. op 1 (1. op 1) op 10 op		
DVCV1# 3100627419E+07 MIN=-4	Y (HIA)= .40285467574	712E+C3			
وتستنيف البيانة ويستنعف المعواه وينجي أحيض بالمتناوي ويتراها		712E+C3			
وتستنيف البيانة ويستنعف المعواه وينجي أحيض بالمتناوي ويتراها		712E+C3			
وتستنيف البيانة ويستنعف المعواه وينجي أحيض بالمتناوي ويتراه		712E+C3			
NACTV(7) = 1 1 1 1		712E+C3			
NACTV(7) = 1 1 1 1		712E+C3			
NACTV(7) = 1 1 1 1		712E • C3			
NACTV(7) = 1 1 1 1		712E+C3			
NACTV(7) = 1 1 1 1		712E+C3			
NACTV(7) = 1 1 1 1		712E • C3			
NACTV(7) = 1 1 1 1		712E • C3			
NACTV(7) = 1 1 1 1		712E • C3			
NACTV(7) = 1 1 1 1		712E • C3			
NAGTV(7) = 1 1 1 1		712E • C3			
		712E • C3			

```
THE PAXIBUP NO. OF ITERATIONS HAS EEEN REACHED
-SUPPARY FOR ITERATION ALMEER ----
                            -DF2 -= --- .4CCCCCCCOCCCE-01-
      --- 144242710806E+64-
 EMAG =
       .402854679747E+03
                            GAMA =
                                   .467295263151E+01
 E = .....253411229610E+03 -.970578168869E+03 -.259577430684E+02
EU1 =
-- OUZ - -- 1586321656455469-- 4.7652624532528-01 --- 178837573356E+01--- 543958163850E-01 ----
 CU # -.1586321656455+39
                    -.705262493252E-01 -.17C837573398E+01
                                                .54399818389GE-01
 C*CU = -.741265556966*G7 -.3255658223756*GC -.7563158861706*G1
                                                -254207774495E+00
.157016841118E+03
                                                .778442077745E+02
 LNEW #
       .129690719404E+L3
                     .27220043417FE+C3
                    -.331544123629E-02 -.166817882427E-01
                                               -.161313377612E-01 -.15581982?107E-01
.275156852534E+C7
                     .175590960965E+07
                                   .135727602119E+05
                                                .313074600192E+04
                                                              .402839098665E+03 C.
 SENSTITUTTY PATPLY
   -. 1180FE64087RE+06
                 .912352950190E+04
                               -392595256546E+D4
                                            -.693051012817E+03
   .174253218325E+05
                 .759658A32F62E+04
                              +. 6232847358425+04
                                            .595254709957E+02
   .2E+E5 .8E+94 -.8E+u4
                     .FE+02
  -. 1E+C5 -. 8E+05
                    . 2E+ C4
              .1E+04
```

	 		REFERENCE TRAJECTORY	INTEGRATION	· • • • • • • • • • • • • • • • • • • •	· · · · · · · · · · · · · · · · · · ·		* *
் பிரை மண்டும் ஆடிய			er og sammen skalender en skalender. Er	• <u>مست</u> د نوو : ه				
			e em la					
.12969	C719404E+C3	.27226C434178E+03	.157(16841118E+)3	.7784420777745E	+02			
ELTA U		and the state of t	er i la sur caso i casa aspara de la laboración de escucios de escucion de escucios de esc					
			6	0 -				

	man and an arrange of the second	and the second s	Annual Marian Control of the Control	المتعادي المتعادات	agranging of a service of the servic		The second secon	
JULTAN CATE	2666681	.6547800C	CONTECL FLASE	6	•	PRIMARY BOCY	CIN	
DAYS FACE LAU		0000000	FRESENT S/C MASS- 15			EFHENERIS EC		
DAYS FACE CUT		.49476000	PONER AVAILABLE			TARGET BODY	ENCKE	*
S/G RELATIVE	TATES	عاد را با النوان ب الشور م ا فيس		الم العبيد ليستر الشار يبيل ال	2		- PAGAITUEE -	نجيب ا
SUN PESTY	ICN	.22655254008362E+C9	.6971724256151		309288781387648		23904631949154E	
VELCO		18476439527(101+62	.1014583253035		.61272696176943E		21187725Fe365#E4	35
EAFTH FCSIT		. A760126166P083E+C8	.1266964812707		309288786367648		1568863784EFCSE	-65
VELCO	114	296629807726236+02	1715223471341		612726961769435		. 34270497833285E+	SZ
ENCKE FCSTT	ICN	21505EE50501C4E+DE	1890120035608		886687168612468		254551325454346	£ 53
VFLCC	TTY	.53546276615312c+C1	.4730367087555		17717682953790		7327621936647664	
S/G ACCELESAT		X	Y	The second secon	2		PAGNITUEE	
BEINTOA BCCA.		72C107367C1162F-C5			300489157180468		.2322-571150587E-	
beetratife to		2568791923C339E-10 ·			311137241712586		.2559C4{6515341E•	
THEUST RAGIATION FRE		134752C5219DA2E-C6	-,3362156397689	0.	4C1715C887E438E	Lar.	.358906447 6 7799E-	
*********	******	***************	***********	*******	******	******	***********	
	**-*							
i januaria 1964 dadi seremunan dapan mengeberakan			GCATECL FHASE	CHANGE				
JULIAN CATE	2444523		CONTECL PHASE	7		PRIPARY BOCY		
GAYS FFCH-LAU			-FRESENT S/C HASS- 44					
DAYS FROM CUT	CFF- 26	149876960	POHER AVAILABLE	16.67623038 KW	(TARGET BODY	ENCKE	
		- FHASE THPLST- FFASE						
		TICK THECTTLING		LCCK ANGLE (DEG)	CCNE RATE (DEG/SEC)	CLCCK RATE (DEG/SEC)		
		909969			0.000C0000			
S/C PELITIVE	CIATEC		•		,		MAGNITUCE	
SUN PCSTI		14196250721650E+69-		9E+G8	.3G158001883572F	+08	.17449.666833266	. E Ç
VELCO		26896645577254E+C2	.3630428143739		132933835220146		.291541296316488	
EARTH - FCSIT	1 CN	586572561826226+65-	.5075055021345	0E+08	-361586818825726	+68	,5 56 3562425945 5 64	· 8 E
VELCO	XIX	19209084429068E+02	2459327548795	5E+02	122933835220146		212349128216566	
ENGHF - FCSTI	166	586517608535936+07	512482055:707	5E+07	285575576643998	E+ 0 7	.836374552818866.	467
VELCO	114	.342287824080398+01	.25840€729:558	1E+ú1 .	144837125984018	E+01	.45767293#62169E	• € 1
SIC ACCELERAT	1CNS	dans de la company de la compa		par en espera año abales enemejos deser e	z		HAGNITUCE	
PRIPARY BCCY		35462831275297E-C5	241986894:182		.753361567387051		.435883509535686	
PERTUREING BO		17096876623312E-10 47683227086218E-06	105120F37_730 3727633713074		.591455381149548		121823011931665	
RAGIATION FRE		G.	0-	st-0/ +.			,44585225AG4324F.	-46

		****	CCNTRCL FF	ASE CHANGE	****		
JULIAN CATE DAYS FECH LAUNCH- DAYS FECH CUTCFF-	2444533.65478000 577.00000000 16.49873066		CONTROL PHASE FRESENT S/C MASS- POWER AVAILABLE			PRIMARY BODY EFHEMERIS EC	
, a 1 3 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							•
	THRUST PHASE	THRUST FHASE	THRUST PHASE	THRUST PHASE	THELST PHASE	THRUST PHASE	
	10.00100000	1.0000000	(DEG) 157.01684112	(DEG) 77.84420777	(CEG/SEC) C.00000000	(CEG/SEC)	
O RELATIVE STATE	5	X	Y		2	a posta namentalizaria relativazione per	MAGNITUCE
SUN PESTITION		*8689737E+C9	.9895068887		.2865218902346		.154709750367286+09
VELGGITY		£5331127 £+ €2	.1036426916	45926+01	2201223323647	0E+01	•3274164516561 6 E+02-
EARTH PESITION VELOCITY		26374217E+C8 7915005CF+02	.25262173726 .251787668		.26F5218902343 2200223323647		.44227575013750E+08 .31150636957362E+ 6 2
ENCKE PESITION	- 355766	76562586E+G7	2988929363	46.775467	1702831873337	CC407	.47167C4441555EF+07
VELCCITY					.1308896692485		.36308767134521E+61 -
S/G ACCELERATIONS Primary eccy		X 51757116E+05	Y 3646676744	5913E-05···	Z 1026872630377	25-05	90-93-196-199764446. - 90-93-196-199764446.
PERTUREING FORIES		65553 8 516-10	1468655686		1354c25905&52		.20670953434292E-15
	547453	75243943E-06	,17139£3585	8199 2- 06	1489369575039	5E-06	. 592676324561015+06
	547453	75243543E-G6	·1713963585	8199E-06	1489369575039	5E-06	
AGIAVICA FFFESUPE	547453	75243543E-G6	,1713963585	8199E-06	1489365575039	5E-06	
MATAN CATE	547453	75243543E-06	,1713963585 C. CCNTRCL PH	8199E-06 ASE CHANGE	1489369575039	55-06	SLN
JULIAN-GATE-	547453 9. 2444543.65476000 587.0000 6.49870000	75243543E-G6	CCNTRCL PH CONTECL FHASE FRESENT S/C FASS- FOMER AVAILABLE THELST FHASE	#SE CHANGE 1443.42710806 21.00000000 THRUST PHASE	1489369575039	PFIFARY BDCY EPHFHFRIS BC TARGET PDDY THRUST PHASE	SLN ENCKE
MATAN CATE	547453 0. 2444543.65476000 587.PCCCCC00 6.4987C000 THPUST FRBSE DLFATICN	THRUST FHASE THRUST FHASE	CCNTRCL PH CONTECL FHASE FRESENT S/C PASS- FONER AVAILABLE THELST FHASE CONE ANGLE	#SE CHANGE	1489369575039 0	PETMARY BOCY EFHEMERIS BC TARGET PODY THRUST PHASE CLCCK RATE	SLN ENCKE
MATAN CATE	547453 9. 2444543.65476000 587.0000 6.49870000	75243543E-G6	CCNTRCL PH CONTECL FHASE FRESENT S/C FASS- FOMER AVAILABLE THELST FHASE	#SE CHANGE 1443.42710806 21.00000000 THRUST PHASE	1489369575039	PFIFARY BDCY EPHFHFRIS BC TARGET PDDY THRUST PHASE	SLN DY ENCKE ENCKE
JULIAN-CATE- DAYS FACH CUTCFF-	547453 9. 2444543.65476000 587.PCCCCC00 6.4587C000 THPUST FHASE DUFATION (GAYS) 213.C000000CG	THRUST FHASE THEOTILING	CCNTRCL PH CONTECL FHASE FRESENT S/C FASS- FOMER AVAILABLE THELST FHASE CCNE FAGLE (DEG) 0.00000000	#SE CHANGE 1443.42710806 21.00000000 THRUST PHASE CLCCK ANGLE 0.00000000	1489369575039 0	PFIFARY BDCY EFHFHFRIS BC TARGET FODY THRUST PHASE CLCCK RATE LCEG/SECJ 0.00000000	SLN DY ENCKE ENCKE
JULIAN GATE DAYS FROM CUTOFF-	547453 9. 2444543.65476000 587.0000000 6.49870000 THPUST FHASE DURATION (GAYS) 213.00000000	THRUST FHASE THRUSTING	CONTRCL PH CONTECL PHASE FRESENT S/C PASS- FONER AVAILABLE- THELST PHASE CONE ANGLE (UEG) 0.00000000	ASE CHANGE 1443.42710806 21.00000000 THRUST PHASE CLCCK ANGLE (DEG) 0.00000000	1489369575039 **** KG KH THRUST FHASE CONE RATE (DEG/SEC) C.000C0000	PFIMARY BODY EPHEMERIS BOTTARGET RODY THRUST PHASE CLCCK RATE	SLN ENCKE ENCKE
JULIAN GATE DAYS FROM CUTOFF-	547453 9. 2444543.65476000 587.00000000 6.49870000 THPUST FRASE DUFATION (GAYS) 213.00000000	THRUST FHASE THEOTILING	CCNTRCL PH CONTECL FHASE FRESENT S/C FASS- FOMER AVAILABLE THELST FHASE CCNE FAGLE (DEG) 0.00000000	#SE CHANGE 9 1443.42710806 21.00000000 THRUST PHASE CLCCK ANGLE 0.00000000	1489369575039 0	PFIMARY BODY EFHEMERIS BO TARGET PODY THRUST PHASE CLOCK RATE LEGG/SEG- 0.00000000	SLN DY ENCKE ENCKE
JULIAN GATE DAYS FROM CUTCFF- S/C RELATIVE STATE SUN POSITION VELOCITY EARTH FOCITIFN	547453 9. 2444543.65476000 587.0000 6.49870000 THPUST FHRSE DLFATION (GAYS) 213.000000000	THECST FHASE THECSTILING 0.00000000	CCNTRCL PH CONTECL FHASE FRESENT S/C FASS- FONEF AVAILABLE THELST FHASE CCNE FNGLE (DEG) 0.00000000	######################################	**** KG KH THRUST FHASE CONE RATE (DEG/SECT- (.000C0000 2	PFIMARY BOCY EFHENERIS BC TARGET PODY THRUST PHASE CLCCK RATE (LCCK-SEC) 0.0000000	SLN OY ENCKE ENCKE ENCKE 132773644024651405 372867478518325402
UNLIAN-CATE- DAYS FROM CUTCFF- S/C PELATIVE STATE SUN POSITION VELOCITY	547453 9. 2444543.65476000 587.0000 6.49870000 THPUST FHRSE DLFATION (GAYS) 213.000000000	THRUST FHASE THECTTLING 0.00000000	CONTRCL PH CONTRCL PHASE FRESENT S/C PASS- FONER AVAILABLE- THRUST PHASE CONE PAGLE (DEG) 0.00000000	######################################	**** KG KH THRUST FHASE CONE FA1E IDEG/SEG1 (.000C0000 2 2625933720371 -3466986479700	PFIMARY BODY EPHEMERIS BOTH ARGET PODY THRUST PHASE CLOCK RATE	SLN OY ENCKE ENCKE ENCKE MAGNITUCE .132773(4402465E+05 .37286747851632E+02
JULIAN CATE DAYS FROM LAUNCH- DAYS FROM CUTCFF- SAG BELATIVE STATE SUN POSITION VELOCITY EARTH FOSITION VELOCITY	547453 9. 2444543.65476000 587.00000000 6.49870000 THPUST FHRSE DLFATICN (GAYS) 213.600000006 853666 37093 316323 162304	THECST FHASE THECSTILING 0.00000000	CCNTRCL PH CONTECL FHASE FRESENT S/C FASS- FONEF AVAILABLE THELST FHASE CCNE FNGLE (DEG) 0.00000000	### ### ##############################	**** KG KH THRUST FHASE CONE RATE (DEG/SECT- (.000C0000 2	PFIMARY ROCY EFHENERIS BC TARGET PODY THRUST PHASE CLCCK RATE	SLN OY ENCKE ENCKE ENCKE 132773644024651405 372867478518325402
SUCCEPTION OF STATE O	547453 9. 2444543.65476000 587.00000000 6.49870000 THPUST FHRSE DLFATICN (GAYS) 213.600000006 853666 37093 316323 162304	THEUST FHASE THECTTLING 0.00000CCC 0.0230072E+08 e79832C7E+12 63535258E+12 29550449E+C7	CONTRCL PH CONTRCL PHASE FRESENT S/C PASS- FONER AVAILABLE- THRUST PHASE COME ANGLE (10EG) 0.00000000 .982422336 -299975078 .7053357100 -2641170516	### ### ### ### ### ### ### ### ### ##	1489369575039 KG KH THRUST FHASE COME RATE (DEG/SEG) C.000C0000	PFIMARY ROCY EFHENERIS BC TARGET PODY THRUST PHASE CLCCK RATE	SLN OY ENCKE ENCKE ENCKE MAGNITUCE .132773C4402465E+05 .37286747851832E+02 .41664656422551E+08 .32264635512377E+02
VELCCITY EARTH PCZITIEN VELCCITY ENCKE PCSITICH	547453 9. 2444543.65476000 587.000000000000000000000000000000000000	THRUST FHASE THRUST FHASE THRUST FHASE THRUST FHASE THRUST FHASE THRUST FLASE THRUS	CONTRCL PH CONTRCL PHASE FRESENT S/C PASS- FONER AVAILABLE- THRUST PHASE COME ANGLE (10EG) 0.00000000 .982422336 -299975078 .7053357100 -2641170516	#SE CHANGE \$. 143.42710806 21.00000000 THRUST PHASE CLCCK ANGLE 0.00000000 0523E+08 3230E+01 5001E+07 1549E+02 7611E+07 1406E+01	1489369575039 KG KH THRUST FHASE COME RATE (DEG/SEG) C.000C0000	PFIMARY ROCY EFHEMERIS BC TARGET PODY THRUST PMASE CLCCK MASE CLCCK MASE O.00000000	SLN DY ENCKE ENCKE ENCKE ENCKE 132773(44024651.05 .372867478518322402 .416640564225512402 .322646355123772402 .322646355123772402

DAYS FFCH LAUNCH- CAYS FFCH CUTCFF-	593.4987C0C0 	FRESENT S/C FRESENT S/C FOHER-AVAILA	E	PRIPA G- EPHEN TARGE	RY BODY SLA IERIS BCCY ENCKE T BODY FACKE	
SAC RELATIVE STATES				Z	MAGNITU	CE
-SUN-FESTITION-			£16737325E+08			
VELCCITY	3584556137507	##67149	7950G3431E+01 -	.42703721314153E+01	.4664336431	36526+02
FARTH PESTITION -	42127190C0320 1851872891616	4E+C8	29f152537E+07 932257515E+02	.24088624683500E+08 .43703731014153E+01		
VELCCITY PESTICE	.2534112296104 .2649297177280		816886902E+03	.29957740068436E+02 .11403103982541£+01		
CAT ACCESCEATIONS			· • • • • • • • • • • • • • • • • • • •	,	MACATÉL	r <u>e</u>
PERTUPEING ECCIES	+.523131653057A	0E-0578366	536745127E-05 - CC507504CE-10 -	.197514587664276-35 .81581222786396E-10	.9627097937 .1538085262	1444E-CS 1199E-09
RAGIATION FRESSUPE		C.			 C.	****
*****		+++++++++++ TERHI	NATICH DATA +++++++	********	***********	
#ECLESTED STOPFING (COMPITION-1 TENG					
ACTUAL STOFFING CONT	CITICH ; TENO			•		
4. W.				the same and an electric property spines the property and the property and the property of the same of of the	بالمحالية والمحالية والأحال والمحال والمحالة	
FLIGHT TIPE .59 FINAL S/C PASS .14	4342710 £06CEE+04			·		
FIRAL S/C PASS .10	134987C1C000fE+03 .4342710 £06CEE+04 .4E+07 V» = .2C452	\$71772801E+G1 FDT	 	+03 RCA = .890	#36324655E+C2	
X = .25341122<6104 Y =5705781678667 Z =2545774766443 R = .1563562(0574)	34987C1C0001E+03 4342710 £06CEE+04 44E+03 V> = .2C452 22E+03 VY = .11403 46E+C2 V2 = .11403 15E+04 V = .3C515	\$717728010+01 FOT \$93206343E+01 ECR 103462541E+01 VPP 865318391E+01 TSO	= .877500900671926 =153633503821426 = .305158653183888 I = .593498729542126	+03	5865318392F+31	·
FIRE S/C PASS .14 X = .2534112256164 Y =5705781648697 Z = -1259577476694 R = .1003562705741 CONIC ELEMENTS S/C YAFFFT CENY	34987C1C0000E+03 4342719 606CEE+04 446+07	9717728C1E+G1 FDT 993206343E+01 ECR 1C35E2541E+C1 VPP 865312391E+01 TSO INC ; +13 -239867E+02	= .877500900671926 =153633503821426 = .305158653183886 I = .593498729542126	+03 - VCA = .3091 +01	5869318392F+01 88722912504E+02 0045235871E+03	
FIRE S/C PASS .14 X = .2534112256164 Y =5705781648697 Z = -1259577476694 R = .1003562705741 CONIC ELEMENTS S/C YAFFFT CENY	34987C1C0001E+03 4342719 £06CEE+04 34E+03 Vy = .2C452 2E+03 VY = .19524 365+C2 VZ = .1146 365+C2 VZ = .30515 5E+04 V = .3C515 .1C738EF-09 .8296CEE	9717728C1E+G1 FDT 993206343E+01 ECR 1C35E2541E+C1 VPP 865312391E+01 TSO INC ; +13 -239867E+02	= .877500900E7192E =15363350382142E = .30515865318388E I = .59349872954212E NCDE AP .288481E+D3 .2323	+03 - VCA = .3091 +01	5869318392F+01 88722912504E+02 0045235871E+03	•••••
FIRE S/C PASS .14 X = .2534112256164 Y =5705781648697 Z = -1259577476694 R = .1003562705741 CONIC ELEMENTS S/C YAFFFT CENY	34987C1C0001E+03 4342719 £06CEE+04 34E+03 Vy = .2C452 2E+03 VY = .19524 365+C2 VZ = .1146 365+C2 VZ = .30515 5E+04 V = .3C515 .1C738EF-09 .8296CEE	9717728C1E+C1 FOT 993206343E+01 ECR 1C35E2541E+C1 VFP 86531E391E+01 TSO INC , +13 -2398E7E+C2	= .877500900E7192E =15363350382142E = .30515865318388E I = .59349872954212E NCDE AP .288481E+D3 .2323	+03 - VCA = .3091 +01	5869318392F+01 88722912504E+02 0045235871E+03	
FIRE S/C PASS 11 X = .2534112256164 Y =5705781678657 Z =2555774076044 R = .1003562005741 CONIC ELEMENTS S/C TAFGET GENT	######################################	9717728C1E+C1 FOT 993206343E+01 ECR 1C35E2541E+C1 VFP 86531E391E+01 TSO INC , +13 -2398E7E+C2	= .877500900E7192E =15363350382142E = .30515865318188E I = .59349872954212E NCDE AP .288481E+D3 .2323	+03	5869318392F+01 88722912504E+02 0045235871E+03	
FIRE S/C PASS .14 X = .2534112256164 Y =5705781648697 Z = -1259577476694 R = .1003562705741 CONIC ELEMENTS S/C YAFFFT CENY	######################################	9717728C1E+C1 FOT 993206343E+01 ECR 1C35E2541E+C1 VFP 86531E391E+01 TSO INC , +13 -2398E7E+C2	= .877500900E7192E =15363350382142E = .30515865318188E I = .59349872954212E NCDE AP .288481E+D3 .2323	+03	5869318392F+01 88722912504E+02 0045235871E+03	
FIRE S/C PASS 11 X = .2534112256164 Y =5705781678657 Z =2555774076044 R = .1003562005741 CONIC ELEMENTS S/C TAFGET GENT	######################################	9717728C1E+C1 FOT 993206343E+01 ECR 1C35E2541E+C1 VFP 86531E391E+01 TSO INC , +13 -2398E7E+C2	= .877500900E7192E =15363350382142E = .30515865318188E I = .59349872954212E NCDE AP .28481E+D3 .2323	+03	5869318392F+01 88722912504E+02 0045235871E+03	
FIRE S/C PASS 11 X = .2534112256164 Y =5705781678657 Z =2555774076044 R = .1003562005741 CONIC ELEMENTS S/C TAFGET GENT	######################################	9717728C1E+C1 FOT 993206343E+01 ECR 1C35E2541E+C1 VFP 86531E391E+01 TSO INC , +13 -2398E7E+C2	= .877500900E7192E =15363350382142E = .30515865318188E I = .59349872954212E NCDE AP .28481E+D3 .2323	+03	5869318392F+01 88722912504E+02 0045235871E+03	
FIRE S/C PASS 11 X = .2534112256164 Y =5705781678657 Z =2555774076044 R = .1003562005741 CONIC ELEMENTS S/C TAFGET GENT	######################################	9717728C1E+C1 FOT 993206343E+01 ECR 1C35E2541E+C1 VFP 86531E391E+01 TSO INC , +13 -2398E7E+C2	= .877500900E7192E =15363350382142E = .30515865318188E I = .59349872954212E NCDE AP .28481E+D3 .2323	+03	5869318392F+01 88722912504E+02 0045235871E+03	
FIRE S/C PASS 11 X = .2534112256164 Y =5705781678657 Z =2555774076044 R = .1003562005741 CONIC ELEMENTS S/C TAFGET GENT	######################################	9717728C1E+C1 FOT 993206343E+01 ECR 1C35E2541E+C1 VFP 86531E391E+01 TSO INC , +13 -2398E7E+C2	= .877500900671928 =153633503821428 = .305158653131288 I = .593498729542128 NCDE AP .288481E+D3 .2323	+03	5869318392F+01 88722912504E+02 0045235871E+03	
FIRE S/C PASS 11 X = .2534112256164 Y =5705781678657 Z =2555774076044 R = .1003562005741 CONIC ELEMENTS S/C TAFGET GENT	######################################	9717728C1E+C1 FOT 993206343E+01 ECR 1C35E2541E+C1 VFP 86531E391E+01 TSO INC , +13 -2398E7E+C2	= .877500900671928 =153633503821428 = .305158653131288 I = .593498729542128 NCDE AP .288481E+D3 .2323	+03	5869318392F+01 88722912504E+02 0045235871E+03	
FIRE S/C PASS 11 X = .2534112256164 Y =5705781678657 Z =2555774076044 R = .1003562005741 CONIC ELEMENTS S/C TAFGET GENT	######################################	9717728C1E+C1 FOT 993206343E+01 ECR 1C35E2541E+C1 VFP 86531E391E+01 TSO INC , +13 -2398E7E+C2	= .877500900671928 =153633503821428 = .305158653131288 I = .593498729542128 NCDE AP .288481E+D3 .2323	+03	5869318392F+01 88722912504E+02 0045235871E+03	
FIRE S/C PASS 11 X = .2534112256164 Y =5705781658657 Z =255577406604 R = .1003562005741 CONIC ELEMENTS S/C TAFGET GENY	######################################	9717728C1E+C1 FOT 993206343E+01 ECR 1C35E2541E+C1 VFP 86531E391E+01 TSO INC , +13 -2398E7E+C2	= .877500900671928 =153633503821428 = .305158653131288 I = .593498729542128 NCDE AP .288481E+D3 .2323	+03	5869318392F+01 88722912504E+02 0045235871E+03	
FIRE S/C PASS 11 X = .2534112256164 Y =5705781658657 Z =255577406604 R = .1003562005741 CONIC ELEMENTS S/C TAFGET GENY	######################################	9717728C1E+C1 FOT 993206343E+01 ECR 1C35E2541E+C1 VFP 86531E391E+01 TSO INC , +13 -2398E7E+C2	= .87750090067192E =15363350382142E = .305158653183888 I = .59349872954212E NCDE AP .288481E+D3 .2323	+03	5869318392F+01 88722912504E+02 0045235871E+03	
FIRE S/C PASS 11 X = .2534112256164 Y =5705781658657 Z =255577406604 R = .1003562005741 CONIC ELEMENTS S/C TAFGET GENY	######################################	9717728C1E+C1 FOT 993206343E+01 ECR 1C35E2541E+C1 VFP 86531E391E+01 TSO INC , +13 -2398E7E+C2	= .877500900671928 =153633503821428 = .305158653131288 I = .593498729542128 NCDE AP .288481E+D3 .2323	+03	5869318392F+01 88722912504E+02 0045235871E+03	

3.2.2 GODSEP

The GODSEP sample case uses a targeted Encke flyby trajectory, generated by TOPSEP, and performs a short error analysis over the terminal mission phase near encounter. The run actually consists of two cases, the first to create an STM file containing appropriate state transition matrices and the second case performs the error analysis.

The first page of output is a reproduction of the \$TRAJ and \$GØDSEP namelist used to create the STM file. Of particular interest in \$TRAJ are the variables MØDE = 2 (for GODSEP), ISTMF = 1 (for STM generation), and IAUGDC (for augmenting the basic spacecraft state vector with ephemeris body state and thrust bias parameters). The \$GØDSEP namelist specifies only one scheduling card along with the STM time span from launch + 543 days through encounter at L + 593.5 days. The scheduling card follows \$GØDSEP and is a dummy measurement to create transition matrices at half day intervals.

The next page contains MAPSEP initialization print. This is followed, on the next three and one-half pages, by the GØDSEP initialization print and the standard TRAJ print blocks which are displayed during the creation of the STM file. STM generation ends with the output of the last STM record covering the next two and one-half pages. This contains trajectory related data such as current (TCURR) and previous (TPAST) STM time points, and finally the transition matrix (PHI) over the interval TPAST to TCURR.

Next, the namelists \$TRAJ and \$GØDSEP are shown for the subsequent error analysis using the previously generated STM file. With ISTMF = 2 in \$TRAJ, reference trajectory data is obtained from the STM file. \$GØDSEP

namelist for the second case specifies a spherical a-priori knowledge covariance, one guidance event executing at L + 567 days with a half day delay time, and no measurement print. The total augmented state consists of 15 solve-for parameters (S/C state, thrust biases and Encke's state) and nine consider parameters (tracking station location biases).

Four scheduling cards specify (1) simultaneous 2-way/3-way doppler measurements twice per day from Goldstone and Madrid, (2) 2-way range once per day from Madrid, (3) 3-way range once per day from Goldstone and Madrid, and (4) three simultaneous star-Encke angle measurements taken twice per day.

Output from the error analysis run begins with MAPSEP initialization print followed by four pages of GODSEP initialization print, including the input a-priori covariance.

The first event printed is a low thrust guidance correction.

This begins with generation of required transition and sensitivity matrices, as represented by TRAJ print at 566.5 days (last effective time of tracking to be used for guidance computations), 567 days (beginning of guidance interval over which thrust control corrections will be computed), 587 days (end of guidance interval and time of nominal thrust shutdown), and 593.5 days (desired target time and time of nominal Encke encounter). After the TRAJ print, the sensitivity matrix of guidance cutoff state with respect to thrust control parameters is shown.

The knowledge (estimation error) covariance is printed at guidance

initiation. Since the Encke ephemeris is part of the augmented state, the Encke relative S/C knowledge covariance is also displayed. After the knowledge covariance, the control (actual error) covariance is shown in analgous fashion.

After the knowledge and control covariances, VMAT and SMAT are printed. These are sensitivity matrices of target parameters WRT guidance initiation state and target parameters WRT thrust control parameters, respectively. VMAT, SMAT and BURNP (S/C mass and thrust acceleration magnitude at guidance start and end) are also provided on punched cards to be used in subsequent GODSEP runs in order to minimize computational time (See \$GEVENT in Section 2.3.3).

Guidance corrections are computed next. The reader is referred to Section 6.6 of the Analytic Manual to better understand the actual guidance computation logic. The guidance cycle uses the various sensitivity matrices, thrust control constraints, and control and target weighting in ultimately computing a "final" set of control corrections. Included is the additional propellant needed to execute these corrections, in this case .8677 Kg. The GAMMA matrix is the final guidance matrix of control corrections WRT guidance initiation state error.

Finally, the guidance event ends with a display of the new control covariance, which assumes all guidance corrections have occurred, and the projected target dispersions before and after guidance initiation.

The next event printed is a "thrust" event which is the same as an "eigenvector" event at the time of a nominal change in thrust

てっち

control policy or a change in the number of operating thrusters. In this case, both control policy and number of thrusters have been changed. The information printed is a standard TRAJ print followed by eigenvalues, eigenvectors and covariances of the heliocentric state and of the S/C relative state (WRT Encke).

A measurement event is printed for a star-planet angle observation with three stars. The TRAJ print is followed by the knowledge covariance before measurement processing. Navigation related matrices are output which include the observation matrix of augmented state WRT the measurement (three star-planet angles taken simultaneously) and the filter gain matrix. The knowledge covariance is then printed after the measurement(s) have been processed.

The final event shown is a "zero burn" guidance event. This occurs automatically (if a previous guidance event has been executed) at termination time (TFINAL = 570 days in \$GØDSEP) to display the final knowledge and control covariances.

For this GODSEP run, the contents of the SUMARY file are printed. Results of every measurement (before and after processing) are displayed and include measurement time and code, RSS S/C position and velocity, and the standard deviations of the knowledge covariances for both S/C state and augmented solve-for parameters.

The user should read pages 31-34 on output control for a better understanding of GODSEP flexibility in terms of printout.

				and the second second second second second		
PSTRAJ					•	
ENGINE = 21.65, 0.65, 21.65	5.					
ENGINE(11) = 0.64+	The second secon		meet and the figure examine and the first time and			
NB = 3. 10.					•	
NTP = 10,						
TLNCH = 2443956.65478.						
THRUST =				•		
9.9 64.1 8*0.,	مسعور والمراجع والرأان الريي					
1 140 1 68.1. 224.6.			4			
1., 230., 1., 75., 252., 54	7000	•	₩ ₩		4	
1 525 1 120.501. 268.		فتناه سيا المتسابية سناد سيأره البراها			· — - · · · · · · · · · · · · · · · · ·	
1., 567., 1.355, 129.6743,			52		and the second	
1., 577., 1., 150.64, 80.,			# E		•	
1., 587., 1., 156.8814, 78,			POOR O			
9., 800., 8*0.,			27			
IAUGDC=3-1,	and the same of th		$\mathcal{A}\mathcal{A}$			
ICOORD = 0.					•	
TSTART = 543						
TEND = 593.5	ويتنا الشابع بمناهدة فالأبارات الناالي		OUALITY IS	man contracted are to be		
NLP = 0. ISTOP = 1.			M M			
. MODE = 2.			• • • • • • • • • • • • • • • • • • • •			
· IPHINT=5.					 	
SCHASS = 1551.3588.				•		
STATE = 1.948380955494E8. 6	8.40846535668802E7. 3.1421	54020684867E7.				
	8.18889592239259014340				* ····	
ISTUF = 1,		rear ereces				
S END TRAJ ENCKE FLYBY APP	PROACH PHASE					
	in the second of					

SGODSEP NSCHED=1+	والمعواصف المتعدالة المنافيح يأدفان			and the second second		
TCURR=543 TFINAL=593.5.						
SEND GODSEP						
	the second of th	The second section of the sect	The second second second second second	* *** * **		
553. 593.5 .5	1001					
and 🕶 the contract of the con				•		

		********			***********	***********	***********	*********	*******
INITIAL EPCCH	(DE FF DE NOE	DATE							
		443956.65478060	64						
				2 MIN 52: 9520 S	ECS				
TPAJECTORY ST				R THE INITIAL E					
		444499.6547810.	24						•
		1980 SEP 17		2 MIN 52.9920 S					
TRAJECTORY EN				THE INITIAL EPG	CH		•		
		44455G.15478JüO							
CALENCAR	DATE	1280 NOV 9	15 HK 4	42 HIN 52.5920 S	ECS				
INITIAL STATE	VECTOR AT	647.000000	ON DAVE AET	TER THE REFERENC	E EDUCH				
THATTARE SIPIE	AFCION NI	Y	OUG UNIS AFT	Y	E EFOUR		 	HAGNITU	ne
FCSITION	_4	.540380 <u>9</u> 554943£+	nc	. 84184653566880	F+RA	.3142154020684	WF+OR	.2145213873	
VELOCITY		24C4272871254E+	02	.81488959223926	E+01 -	.143443342769		.2335392347	
SEPS HASS			.35880G0000°						
EXPAUST WELCCITY			.41830C0000						
ELECTRIC PCHED AT			.6500033030	KW					
THFUSTER EFFICIEN			-=46000C00C						
raciation fressur	E COEFFICIEN	7 -1	.0000000000						
		ryph, ref should be about the sample on the land of the same should be a second or the same s							
LIST OF GRAVE	INTING BODIE	5							
EAPTH									
ENCKE		Andrea de la companya de la company			جانب شيخان جانبيستان				
TARGET PLANET	TS ENGRE		•						
	15 - 010								\circ
INTEGRATION'S	TEP FACTOR	.0500							
									OF POO
REFERENCE THRUST									POOR
				THRUST PHISE					δ
PHASE	ENU TIKE.	THEGITLING	CCNE ANGLE		CONE RATE	CLOUK KATE	OF		ä
PUFEER	'"64.030000"	0.000050		(DEG)	(UEG/SEC)	(DEG/SEC)	14K0215K2	 	
3	145.030030	1.363930	E8.1660C		0.0.000	0.000300	0.00000		12 1
.	230.030C3C	1.000000	75.03000		0.000000	0.000000	0.003563		QUA
	470.630000	1.363666	85.334000		0.000000	6.000000			E
	525.0:0303	1.000000	120.50100		0.000000	0.001000	0.3.0.60		
6	507-0-00020	1.355300	129.67430		0.0.4003	8.000000	6.003000		5
	'577.JSCC.C"	1.000000	150.640000		0.000003	0.000000	7.000360		
8	587.000010	1.020003	156.88140		0.000000	0.000000	7.000260		
9	900-000010	0.000000	0.00000	0.00000	0.00000	0.000000	0.300.00		
BOCY PARAMETERS A					LIAN DATE2	.444580.000000	20000		
PLANET SPEER		.500000	100300E+04	<u> </u>	 				
		SIANT .1.0000	BCCCOOF-DA-1	M##4/SFC++2					
SEPI-PAJOR A		612670JE+05 KM		KN/JC					
ECCENTRICATA		3000003E+00		1.0/JC					
INCLIBATION		GCC000CE+02 DCG		DEG/JC					
		366000"E+03 DFC		DEG/JC		and the second			
ASCENETAG NO	DE								
ASCENCIAG NO		OCCUUODE+03 DEG		DEG/JC					

			JOB NO.	
			RUN DATE	08/30/74
			 	
	RAJECTORY TIME 543.0000 E RAJECTORY TIME 543.0000 E			
	MACCOOK! !!!	n''3		
WEARINEEMERY IN	TEATER FUEL PURLET PAURALI			
HEASUNCHERS AND	PROPASATION EVENT SCHEDULE			
بران والوجيد بالزار وجراسة الأجيد سنت			*	
FRCM 253.0	USE DAYS TO 593.50000 DA	YS IN INCREMENTS OF .500CU CA	(YS CODE NO. 1001	
				•
0	EIGENVECTOR EVENTS	1.8	Pr	·
				•
•	TLDUCK FURNISH			
	THRUST EVENTS			
	EVENT TIME (DAYS)	TYPE	The second secon	
	567.030			
eden i rodin ne hasi de o i non aspirolo a la pagino di la compania di la compani	577.0C0			
	587.030			
	ينين و دار موجوعة در دارد او افتار الله و هجور در موجوع والهج التين و دار موجوعة درارد الله والراز الله و المعارف		والإداري الميدانية والمستحددة المستحد الأالات المالية	
	GUIDANCE EVENTS			
		The state of the s	ر در ۱۰ د العالم ومدی معادل میدن بینی بیدانه و ماند باشد بینیسی بین ساز در بید را بیدان بین مساور است. در ۱۰ د ۱۰ د العالم ومدی معادل میدن باشد باشد باشد بینیسی بین است این از این از این این است بینیس باشد است.	***************************************
<u> </u>	PRECICTION EVENTS	•		
CLARENT KUN	SEGNEUT CREATES STH FILE			
	-	# = = = # = = = = = = = = = = = = = = =		
HILTEN PATE 74	44459.65478000	CONTRCE PHASE		300Y 5UN
DAYS FROM LAUNCH-	543.00000000	FRESENT S/C PASS- 1551.35880000	KG EPHENERI	S BCDY FNCKE
GAYS FACE CUTCEF-	56.53	FOHER AVAILAGLE 11.75187839	KW TARGET B	DOY ENCKE
SIG RELATIVE STATES			- Z	HAGNITUDE
SUN PCSITICH VELOCITY	-1948381955494UE+U9 -122404272871254E+12	.84u34E535E68U0E+08	.3142154020 Eb49E+u8	.21452136735275E+09
ACTOOTED		.81888959223926E+01	=.14340334276914E-J1	.238539234710476+22
EARTH FESTTICH	.45211334980722E+08	.987210832294146+08	.3142154020 £849E+08	.11303641127.497E+C\$
VELOCITY	24818351155949E+UZ	,21349793148540E+0Z	1434033427E914E-01	.327378437726792462
ENCKE PESITION	13960160263432±+68	123737526:78055+08	61339568211122E+07	.19447/394911116+58
VELCCITY	.4415836675;006E+C1	.4C1142938;6213E+01	.16601696594336E+01	*612552311#3730E+01
S/C ACCELERATIONS	리마 레이크 항상 : 프리카드 스스		2	MAGNITUCE
PETHARY ECCY	26192316626572E-t5	113035598EG633E-05	42240349746370E-06	. 288383849248416-85
PERTUREING BOCIES	30398533164441£+16 12167789018634E-36	25842526435859E-10 426371613t 7255E-06	8778497870E701E-11 54871554659891E-07	.468533172233546-13 .44661279031556E-36
THRUST	1757011014705745			

DAYS FECH GUICFF-	44499.65478000 543.69669900 50.50000000	CONTRCL PHASE 6 PRESENT S/C MASS - 1951-3988 CCTO FUHER AVAILABLE 11.75147439	KG PRIMARY E KG EPHLMERIS KM TARGET BO	BCCY FNCKE
	X			
S/G RELATIVE STATES			Z	HAGNITUGE
SUN FCCTTICH	.19482809554940L+69	.84u84€53506800£+u8	.314215402368496+03	.214521:3735275E+39
VELOCITY	224842/2871254E+02	.d18885592:3926E+01	143403342769146-01	.23853923471347E+02
EARTH POSITION	.45c1133498C722E+C8	•98721C83229414c+G8	.314215402068492+28	.1130304114/397_+09
VELOCITY	24818391199949E+02	21349793148540E+u2	14340334276914E1	.327376437726796+22
**************************************	and the same of th		The second secon	
ENGKE POSITION	13960160263432E+08	12.707526 17805E+08	+.61339568211122E+37	.19447739491111E+08
VELOCITY	.44158366750006L+01	.401142938.6213c+01	.16631696594336E+61	.619252311437932+81
nga katagara ping disebat me				
S/C ACCELERATIONS		Y	7	MAGNITUEL
PRIMARY BCOY	2c192316626572L-05	113035996n:0433E-05	42240349746370E-06	.288383649248418-05
PERTUREING BOCTES	30398533164441E-10	25042526435859E-10	877849787087018-11	
THPUST	1210/784018634c-C6	426371013d7255E+u6		.446012793515596+66
PAGIATION PRESSUPE	6.		, 0 •	û.
			The second secon	
	44514.41978499	CONTROL PHASE 6	PRIMARY E	OUY SEN
AYS FACH LAUNCH-	557.765.3499	FRESENT S/C MASS- 1518.18093029		BCDY ENCKE
AYS FECH GUTCEF-	35.73499501	FOHER AVAILABLE 14.37392785	KW TARGET BO	
O RELATIVE STATES	Y	🛶 🙀	7	HAUNTTUGE
UN POSITION	.163909773080271+09	.920344404c6458E+08	30970574851651E+C5	1151224352825355+19
VELOCITY				
ALFOCIES	26144348191966L+JZ	.575985456:6865E+u1	7320o91J490927F+J0	1261203734142615462
ARTH PESITICY	.15985451537131E+08		.309765740516616+08	* .781722626728795+38
HELOCITY	21.99950679105t+J2	23563232051286E+02	732089104929276+00	.310381[044943@:+02
NCKE PCSITION	875417291785532407	744245595 74592+07	408941934167195+47	.121962961e-762E+28
VELOCITY	.37629763822296E+01	.32.79231818838E+01	.15402164715836E+J1	.517909940940291431
JC ACCELERATIONS	×	· · · · · · · · · · · · · · · · · · ·	Z	HAGHITUCE
FIMARY PCCY	212008682057271-05	177224072147694-45	5896507870763650	. Se 2692536016?1e-55
EPTOMETRE BOCTES	312876606411915-16	518d30308:3ss2E-10	261600783259375-10	741132765674172-13
TERUST				
ADIATION FRESSURE	91439563911748E-37	5456439421J297E-06	74119594448564E-67	~~55819555313196E-2E~~~
AUIATICA PRESSURE		0.	0.	C.
		•••••	•••••	
	****	CENTREL PHASE CHANGE	****	
	i i i i i i i i i i i i i i i i i i i		······································	and the second of the second o
LLIAY CATE 24	44523.65476050	CONTROL PHASE 7	PRIMARY B	CLY SLN
	567.003.0030	FRESENT S/C MASS- 1493.44521.17		BCOY -+ ENCKE
		FOHER AVAILABLE 16.07711523	KW TARGET JO	
AYS FECH LAUNCH-	26.5006.006			
AYS FECH LAUNCH-	26. 2000. 00 C			
AYS FROM CUTOFF-		THEUST PHASE THOUST PHASE	THRUST PHASE THRUST DA	15°r
AYS FROM CUTOFF-	HRUST PHASE THPUST PHASE		THRUST PHASE THRUST PH	
AYS FROM CUTOFF-	HRUST PHASE THPUST PHASE DURATION THROTTLING	GCNE ANGLE CLOCK ANGLE	CONE RATE CLOCK RA	TE
AYS FROM CUTOFF-	HRUST PHASE THPUST PHASE DURATICH THROTTLING (DAYS)	GONE ANGLE CLOCK ANGLE (UEG)	CONC RATE CLCCK RA	TE C)
AYS FROM CUTOFF-	HRUST PHASE THPUST PHASE DURATION THROTTLING	GONE ANGLE CLOCK ANGLE (UEG)	CONE RATE CLOCK RA	TE C)
AYS FROM LAUNCH- AYS FROM CUTCFF- 1	HRUST PHASE THPUST PHASE DURATICH THROTTLING (DAYS)	GONE ANGLE CLOCK ANGLE (UEG)	CONE RATE CLOCK RA (DEG/SEC) (DEG/SE 0.00000000 0.00000	TE: 000
AYS FECH LAUNCH- AYS FROM CUTCEF- 1	HRUST PHASE THPUST PHASE DURATICH THROITLING (DAYS) 10.223300CJ 1.03C33350	GONE ANGLE CLOCK ANGLE (UEG) 150.646.0000 80.0000000	CONL RATE CLOCK RA (DEG/SEC) (DEG/SE 0.00000000 0.03000	TE C) OCO NAGNITUCE
AYS FROM LAUNCH- AYS FROM GUTCFF- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	HRUST PHASE THPUST PHASE DURATICH THROITLING (DAYS) 10.00000000000000000000000000000000000	GONE ANGLE CLOCK ANGLE (UEG) 150.646.0000 80.0000000 Y .968702673622735448	CONL RATE CLOCK RA (DEG/SEC) (DEG/SE 0.00000000 0.00000	TE: 000
AYS FROM LAUNCH- AYS FROM CUTOFF- 1	HRUST PHASE THPUST PHASE DURATICH THROITLING (DAYS) 10.223300CJ 1.03C33350	GONE ANGLE CLOCK ANGLE (UEG) 150.646.0000 80.0000000	CONL RATE CLOCK RA (DEG/SEC) (DEG/SE 0.00000000 0.03000	TE C) OCO NAGNITUCE
AYS FROM CUTCEF- 1 1 1 1 1 1 1 1 1 1 1 1 1	HRUST FHASE THPUST PHASE DURATICH THROTTLING (0AYS) 10.20300001 1.000000000 X .1419557332314(F+39288966022726742462	GONE ANGLE CLOCK ANGLE (UEG) 150.646.0000 80.0000000 Y .968702673622735448	CONL RATE CLOCK RA (DEG/SEC) (DEG/SE 0.00000000 0.00000	TE C) 0C0 NAGNITUCE -17448425232272E+09
AYS FECH LAUNCH- AYS FECH CUTCEF- 1 1.0 RELATIVE STATES LN 4CSITICN VELOCITY	HRUST PHASE THPUST PHASE DURATICH THROITLING (DAYS) 10.00000000000000000000000000000000000	GONE ANGLE CLOCK ANGLE (UEG) 150.646.0000 80.0000000 Y .968702673622735448	CONL RATE CLOCK RA (DEG/SEC) (DEG/SE 0.00000000 0.00000	TE C) 0C0 NAGNITUCE -17448425232242E+09 -28154032673357E+02
AYS FECH LAUNCH- AYS FROM CUTCEF- 1 1/C RELATIVE STATES IN POSITION VELOCITY ARTH POSITION	HRUST FHASE THPUST PHASE DURATICH THROTTLING (DAYS) 10.0000000000000000000000000000000000	GONE ANGLE CLOCK ANGLE (DEG) (U.G.) 150.640.0000 80.03003000	CONL RATE CLOCK RA (DEG/SEC) (DEG/SE 0.00000000 U.03000 2 .3C1576512J2297F+C8 1329b28277445E+01 .3C157651202297E+08	TE C) 0C0 NAGALTUCE -17448452322426409 -291540326733576402 -590345161712126408
AYS FECH LAUNCH- AYS FECH CUTCEF- 1 1/C RELATIVE STATES ILN ACCITION VELOCITY	HRUST FHASE THPUST PHASE DURATICH THROTTLING (0AYS) 10.20300001 1.000000000 X .1419557332314(F+39288966022726742462	GONE ANGLE CLOCK ANGLE (UEG) 150.640.0000 80.03003000	CONL RATE CLOCK RA (DEG/SEC) (DEG/SE 0.00000000 0.03000 Z .3C1576512J2297F+C8 13296282774445E+C1	TE C) 0C0 NAGNITUCE -17448425232242E+09 -28154032673357E+02
AYS FECH LAUNCH- AYS FECH CUTCEF- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	HRUST FHASE THPUST PHASE DURATICH THROTTLING (DAYS) 103300CJ 1.03033330 X .1419557332314(F+39288966C2472674E+C265462275323868E+C519209941524488E+02	GONE ANGLE CLOCK ANGLE (DEG) (U.G.) 150.640.0000 80.03003000	CONL RATE CLOCK RATE (DEG/SEC) (DEG/SEC) (DEG/SEC) 0.00000000000000000000000000000000000	TE C) OCO NAGNITUCE -174484252322422409 -291540326733572402 -590345101712122408 -31235317578.332402
AYS FECH LAUNCH- AYS FROM CUTCEF- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	HRUST FHASE THPUST PHASE DURATICH THROITLING (DAYS) 10.0000000000000000000000000000000000	GONE ANGLE CLOCK ANGLE (DEG) (U.G.) 150.640.0000 80.03003000	CONL RATE CLOCK RATE (DEG/SEC) (DEG/SEC) (DEG/SEC) (DEG/SEC) (D.00000000 U.000000000000000000000000000	TE C) 000 NAGNITUCE -17448465232272E+09 -29154032673357E+02 -59034510171212E+08 -31035317578133E+02
AYS FECH LAUNCH- AYS FECH CUTCEF- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	HRUST FHASE THPUST PHASE DURATICH THROTTLING (DAYS) 103300CJ 1.03033330 X .1419557332314(F+39288966C2472674E+C265462275323868E+C519209941524488E+02	GONE ANGLE CLOCK ANGLE (DEG) (U.G.) 150.640.0000 80.03003000	CONL RATE CLOCK RATE (DEG/SEC) (DEG/SEC) (DEG/SEC) 0.00000000000000000000000000000000000	TE C) OCO NAGNITUCE -174484252322422409 -291540326733572402 -590345101712122408 -31235317578.332402
AYS FECH LAUNCH- AYS FECH CUTCEF- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	HRUST FHASE THPUST PHASE DURATICH THROITLING (DAYS) 10.0000000000000000000000000000000000	GONE ANGLE CLOCK ANGLE (DEG) (U.G.) 150.640.0000 80.03003000	CONL RATE CLOCK RATE (DEG/SEC) (DEG/SEC) (DEG/SEC) (DEG/SEC) (D.00000000 U.000000000000000000000000000	TE C) 000 NAGALTUCE -174484252322721409 -251540326733576402 -590345101712126408 -310353275760336402 -032892732971346407 -452635893146030401
AYS FECH LAUNCH- AYS FECH CUTCEF- IN ACCITICATE VELOCITY ARIH POSITION VELOCITY NOME FOSITION VELOCITY // ACCELERATIONS	HRUST FHASE THPUST PHASE DURATICH THROTTLING (DAYS) 10.2030003 1.00003350 .1419557332314(F+39288966022726742+62654622753238682+05152099415244882+02589198006848052+27 .342292114518362+01	GONE ANGLE CLOCK ANGLE (DEG) (U.G.) 150.640.0000 80.03003000 V	CONL RATE CLOCK RATE (DEG/SEC) (DEG/SEC) (DEG/SEC) (DEG/SEC) (D.00.00000 U.0.00000 U.0.000000 U.0.00000 U.0.000000 U.0.00000 U.0.0000 U	TE C) 0C0 NAGNITUCE -17448425232272E+09 -29154032673357E+02 -59134510171212E+08 -31235317576.33E+02 -03284277257134E+07 -452635253146032+01 NAGNITUE
AYS FECH LAUNCH- AYS FECH CUTCEF- I AND ACCEPTATION STATES LN COSTICN VELOCITY ARTH POSITION VELOCITY NORE FOSITION VELOCITY AG ALLELERATIONS PIMERY DOTA	HRUST FHASE THPUST PHASE DURATICH THROITLING (DAYS) 10.0000000000000000000000000000000000	GONE ANGLE CLOCK ANGLE (DEG) (U.G.) 150.640.0000 80.03003000 . 968702673622732+U8 .362988481692326+01 .50/50832/517046+U8245938188207766+02512517809739356+07 .258352396374146+03	CONL RATE CLOCK RATE (DEG/SEC) (DEG/SEC) (DEG/SEC) (DEG/SEC) (D. 0.0000000 U.0.00000000000000000000000	TE C) 000 NAGALTUCE -174484252322721409 -251540326733576402 -590345101712126408 -310353275760336402 -032892732971346407 -452635893146030401
AYS FROM LAUNCH- AYS FROM GUTCEF- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	HRUST PHASE THPUST PHASE DURATICH THROITLING (DAYS) 10	GGNE ANGLE (DECK ANGLE— (DEG) (DEG) 150.640.0000 AO.0000000 Y96A772673822732+08 .362908481052328+0150/50832/517048+08245938188207768+02512517809739356+07258352396374148+03 Y242010109117288-05105122567251698-09	CONL RATE CLOCK RATE (CEG/SEC) (DEG/SEC) (DEG/SEC) (DEG/SEC) (D.00000000 U.0100000000000000000000000000	TE C) 0C0 NAGNITUCE -17448425232272E+09 -29154032673357E+02 -59134510171212E+08 -31235317576.33E+02 -03284277257134E+07 -452635253146032+01 NAGNITUE
ARIH POSITION CKE FESTION CKE FESTION	HRUST FHASE THPUST PHASE DURATICH THROITLING (DAYS) 10.0000000000000000000000000000000000	GONE ANGLE CLOCK ANGLE (DEG) (U.G.) 150.640.0000 80.03003000 . 968702673622732+U8 .362988481692326+01 .50/50832/517046+U8245938188207766+02512517809739356+07 .258352396374146+03	CONL RATE CLOCK RATE (DEG/SEC) (DEG/SEC) (DEG/SEC) (DEG/SEC) (D. 0.0000000 U.0.00000000000000000000000	TE C) 000 NAGNITUCE .174484652322722409 .291540326733572402 .590345101712122408 .31035317578.332402 .032892732571342407 .495635253140032401

AVS FROM CUTOFF-	444525, 95414107 569, 3393F108 24, 1616:892	CONTROL FHASE: 7 FRESENT S/G MASS- 1488.35719453 FOMEN AVAILABLE 17.37079368	KG EPHLM	RY BODY SLN ERIS BODY ENCKE T BODY ENCKE
C RELATIVE STATES	<u> </u>		7	445. *****
th PS-111CH	.13e132_6326878t+.9	.9755225u135938c+u8	.29876794048977E+E8	######################################
VELCCITY	29723146322867E+C2	.311676772277596+01	151784493540037+01	.29923651967eu92422
APTH POSITION	391596152756176+97	.45766517588636E+u8	.2987079+048977F+08	5070734545757.5478
VELCCITY	18099248249507F+J2	2471a067u649n8E+u2	151J84J93540C3E+u1	.5479234265257.E+C8 .51152C23627646E+O2
		and the second s	 -	
NCKE POSITION VELOCITY	5216432822 6779c+07 .32c152191297896+01	460791393214186+07 .253428627205256+01	260659463926885+47	.743225253978156.67
	Secure (17 Car June 18 17 Car June 1	***************************************	.141767245885cuE+S1	.436641176851666+81
INC ACCELERATIONS			Z	HAGNITUTE
PIMARY BELY	672C3846a3341E-05	2633296361L017E-05	o[6323310+2896E-06	.4569995330ge77c=05
FRICZEING BCCIES FRUST	+.73685996799515F-11 49.79733141166E-16	114553065552516-09 5u232634925934E-u7	7-272485952823E-10	.135564822463358-05 ~~
SAUZZENA HOLLALON	C.	0.	120313J8769398E-06	.507819-33717-7E-26
***********	**********		*******	*****************

		CENTROL PHASE CHANGE	****	y a first of the second
ULIAN CATE 2		CONTROL PHALE 8 FPESENT S/C MASS- 1473.13300756		RY BOUY SUN ERIS BCCY ENCKE
AVS FROM GUTCEF-	1c.56700000	FOWER AVAILABLE - 23.02597695		T BOUY ENCKE
				Ziiok
	THPUST PHACE THRUST PHASE	THRUST PHASE THRUST PHASE		T PHASE
	DURATION THROTTLING	CCNL ANGLE CLOCK ANGLE (UEG) (DEG)		K RATE G/SEC)
معين المنافعة المنافعة	15.0000000 1.0000000			0000000
AP SELATER PRESE				
IS WELDTIVE STATES ON POSITION	.115409530867586+35	Y	Z .28E5147752.1.6E+.8***	MAGNITUU: .1547735116EU06E+09
VELCETTY	326513450327736+.2	.10356176178578E+01	+.22005do5508Go2£+G1	.32/41799239926462
APTH FCSITICH	161697763840100+08	.292612406972726+08	.266514779201062+38	
			.266514779201062408 220258635063626401	.44529-113344586+D8 .3115867-76562712+C8
APTH POSITION ACCUSTING ACCUSTI	161697763840100+08	.292612406972726+08		
APTH PECSITION	16:69776384010E+C8 18:214348516352+C2	.29261240697272E+08	223358855063626+01	.311586.70564712+68
APTH PESTITION VELOCITY	16169776384010E+C8 182214348516951+C2 3233917666.514E+07	.29261240697272E+08 29179515980374c+62 258986239355666+67	2235865506362L+01 17035429766371E+07 .13085334652464E+01	.311536.70502712+CE .472224C91631u2E+37 .36331474482866E+01
APTH POSITION ACCUSTING ACCUSTI	16169776384010E+C8 182214348516951+C2 3233917666.514E+07	.29261240697272E+08 29179515980374c+62 258986239355666+67	2235865506362L+01 17035429766371E+07 .1308533465246+E+01	.311536.70562712+68 .472224691631026+07 .363014744828666+01 NAGNITUEF
APTH FCSITICM VELCCITY NGKF FCSITICM VELCCITY NC ACCELEFATIONS PIMACY ECCY ERTUREING BUCIES	16:69776384313E+C818:21434891635E+C23233917666.514E+67 .27280369176535E+31 X41366584114137E-C5 .66357744717573E-10	.29261240697272E+08 25179515980974c+02 25898E23935566E+u7 .234852809E8867E+u1	2235865506362L+01 17035429766371E+07 .13085334652464E+01	.311536.70502712+CE .472224C91631u2E+37 .36331474482866E+01
APTH FCSTTICH NGKF PCSTTICH VELOCITY VC ACCELEFATIONS PIMACY ECCY ERTURING BCC125 FROM	16:69776384010E+C8 18:214348516956+C2 3233917666.5146+07 .272803691765356+01	.29261240697272E+08 29179915980974c+02 2948623935566E+07 .234852809E8867E+01 35470438966568E-09 140847676669136E-09 173051975453752-06	223.5865508362c+01 17035429766371E+07 . 13085334652464E+01	.311536.70552712+C8 .472224C9163102E+G7 .3830147448286EE+01 NAGAITUEF .554563414453456-C5
APTH FCSITICM VELCCITY NGKF FCSITICM VELCCITY NC ACCELEFATIONS PIMACY ECCY ERTUREING BUCIES	16:69776384313E+C818:21434891635E+C23233917666.514E+67 .27280369176535E+31 X41366584114137E-C5 .66357744717573E-10	.29261240697272E+D825179515980374c+4225898E23935566E+47 .234852809E8867E+U1 Y354704385C6568E-D5146847676(5)30E-09	223.5865508362c+01 17035429760371E+07 . 1308533405240+E+01	.31153c.7o5c271c+C8 .472224C\$1631u2E+37 .3630147446286EE+01 NAGAITUEF .5545C361445545c-C5 .2cc693370u440c-u9
APTH FCSTTICH VELOCITY NGRE FCSTTICH VELOCITY VC ACCELEFATIONS PIMACY ECCY ERTUREING BCC125 HPJJJT	16:69776384313E+C818:21434891635E+C23233917666.514E+67 .27280369176535E+31 X41366584114137E-C5 .66357744717573E-10	.29261240697272E+08 29179915980974c+02 2948623935566E+07 .234852809E8867E+01 35470438966568E-09 140847676669136E-09 173051975453752-06	223.5865508362c+01 17035429760371E+07 . 1308533405240+E+01	.31153c.7o5c271c+C8 .472224C\$1631u2E+37 .3630147446286EE+01 NAGAITUEF .5545C361445345c-C5 .2cc693370u440c-u9
APTH FCSTTICH NGKF PCSTTICH VELOCITY VC ACCELEFATIONS PIMACY ECCY ERTURING BCC125 FROM	16:69776384313E+C818:21434891635E+C23233917666.514E+67 .27280369176535E+31 X41366584114137E-C5 .66357744717573E-10	.29261240697272E+08 29179915980974c+02 2948623935566E+07 .234852809E8867E+01 35470438966568E-09 140847676669136E-09 173051975453752-06	223.5865508362c+01 17035429760371E+07 . 1308533405240+E+01	.31153c.7o5c271c+C8 .472224C\$1631u2E+37 .3630147446286EE+01 NAGAITUEF .5545C361445345c-C5 .2cc693370u440c-u9
APTH FCSTICH MGKF PCSTITCH VELOCITY NO AGGELEFATIONS PIMAPY ECSY ERTUREING BUCIES APJUT ADJATION PRESSURE	16169776384010E+C8192214348516954.C23223917666.5144.07 -272803691765356+01 X413665801141374-C55248652361112856-C6 C-	.29261240697272E+0825179515980374c+0225898E23935566E+07234852809E8867E+01 Y35470438506568E-051468476765030E-09173051575450756-76	22J-58E5508362L+0117035429766371E+07 .12085334652404E+01	.31153cJ7o5c271c+C8 .472224C91631u2E+G7 .3630147448286EE+01 NAGNITUUF .55455c31445345c-C5 .2cc93379u0445c-U9 .75271070bu45186+UE
APTH FCSTICH MGKF PCSTITCH VELOCITY NO AGGELEFATIONS PIMAPY ECSY ERTUREING BUCIES APJUT ADJATION PRESSURE	16:69776384313E+C818:21434891635E+C23233917666.514E+67 .27280369176535E+31 X41366584114137E-C5 .66357744717573E-10	.29261240697272E+0829179915980374c+0229898E23935566E+07 .234852809E8867E+01 Y35470438506568E-0514084767619130E-09173051979451752-06 CCNTRCL FHASE 8	223.5865508362L+01 17035429766371E+07 . 12085334652404E+01	.31153C.705c271z+CE .472224C\$1631u2E+U7 .363014746286EE+01 NAGAITUUF .5545C431445345C-C5 .2cc093373uu4452-U6 .56271170604518E+UE
APTH FCSITICH VELOCITY ACTUAL PRECOUPE PRIMARY ECCY PRIMA	16169776384010E+C8182214348916954+C23223917666.5144+07 -27280369176535E+01 413605841141374-C560377447175736-1054865236111285E-C6 C0	.29261240697272E+0825179515980374c+0225898E23935566E+07234852809E8867E+01 Y35470438506568E-051468476765030E-09173051575450756-76	223.5865508362.401 17035429760371E+07 . 13085334052404E+01 10269634125149E-05 125446009170592-09 3. 14841535032236E-08 3. PRIMA	.31153cJ7o5c271c+C8 .472224C91631u2E+G7 .3630147448286EE+01 NAGNITUUF .55455c31445345c-C5 .2cc93379u0445c-U9 .75271070bu45186+UE
APTH FCSITICN AGKE FCSITICN VC ACCELERATIONS PIMAPY ECGY ERTURATING BUCIES APJUT ASIATION PRESSURE ULTAN DATE AYS FACH CUTCEF-	16169776384015E+C8182214348916952+C23223917666.5144-07 -27280369176535E+01 413605841141374-C560577447175736-1054805230121285E-C6 C. 444535.60782515	.29261240697272E+0825179515980374C+0225898E23935566E+07 -234852809E8867E+01 354704385C6568E-05146847676C5330E-0917385157545375E-06 CCNTRCL FHASE 8 FRESENI S/C FASS- 1465.008292CG FOMER AVAILAELE 23.80045030	223.5865508362.401 17035429760371E+07 . 13085334052404E+01 10269634125149E-05 125446009170592-09 3. 14841535032236E-08 3. PRIMA	.31153c.705c271c+CE .472224C91631u2E+G7 .3630147448286EE+01 NAGNITUEF .5545C431445345c-C5 .2cc693379304432-U9 .55271176bu4518E+UE 3. RY BOUY SLN ERIS BCOY ENCKE T BOOY ENCKE
APTH FCSITICH AGKE PCSITICH VELOCITY VC ACCELFFATIONS PIMACH ECCY PROJET ASIATION PRESSURE ULTAN DATE AYS FROM ENTOFF- AYS FACH CUTCFF- VC PELATIVE STATES	16169776384010E+C8182214348916954+C23223917666.5146+07 -27280369176535E+01 413605841141376-C554805236121285E-C6 C0 444535.60788515 ->46.9531.51514.54685485	25261240697272E+08 25179515980374c+02 25898623935566E+07 23485280968867E+01 35470438506568E-05 14.084767069 13.0E-09 17305197545375E-06 CGNTRCL FHASE 8 PRESENT S/C MASS- 1465.00829206 POMER AVAILABLE 23.80645030	223.5865508362L+01 17035429760371E+07 . 1308533465240+E+01 7 10269634125149E-05 1354+6039170592-09 2. 14841535032236E-06 3. PRIMA KG PRIMA KG EPHEM KM TARGE	.31153C.705c271c+CE .472224C\$1631u2E+U7 .36301474462866E+01 NAGAITUEF .5545G41445345C-C5 .2cc93373uu4u3c-u9 .5627107Cb04\$18E+UE 3. RY BOUY SLN ERIS BCOY ENCKE T JODY ENCKE
APTH FCSITICN AGKE FCSITICN VC ACCELERATIONS PIMAPY ECGY ERTURATING BUCIES APJUT ASIATION PRESSURE ULTAN DATE AYS FACH CUTCEF-	16169776384015E+C8182214348916952+C23223917666.5144-07 -27280369176535E+01 413605841141374-C560577447175736-1054805230121285E-C6 C. 444535.60782515	.29261240697272E+0825179515980374C+0225898E23935566E+07 -234852809E8867E+01 354704385C6568E-05146847676C5330E-0917385157545375E-06 CCNTRCL FHASE 8 FRESENI S/C FASS- 1465.008292CG FOMER AVAILAELE 23.80045030	223.5865508362.401 17035429760371E+07 . 13085334052404E+01 10269634125149E-05 125446009170592-09 3. 14841535032236E-08 3. PRIMA	.31153c.705c271c+CE .472224c91631u2E+37 .36301474462866E+01 NAGAITUEF .5545C341445345c-C5 .2c693373uu445c-u9 .5927127C6c45186+CE 3. RY BOUY SLN ERIS BCOY ENCKE T BOOY ENCKE *ASAITUEE .15654791277476+09
APTH FCSITICH AGRE FCSITICH VELOCITY VELOCI	16169776384010E+C8182214348916951+C23223917666.5144+07 -27280369176535E+01413665801141371-C5054805236121285E-C6 C0 444535.60788515	- 25261240667272E+08 - 25179515980374c+02 - 25898E23935566E+07 - 234852805E8867E+01 Y - 35470438506568E-05 - 14684767615150E-09 - 173051575453752-06 CCNTRCL FHASE 8 PRESENT S/C MASS- 1465.00829206 POMER AVAILABLE 20.80045030 Y - 5900005304544E+38 - 38149663063193E+00	223.5865508362.+01 17035429766371E+07 .12085334652464E+01 Z 10269634125149E-05 1354-6039170592-09 >. 14841535032236E-26 3. PRIMA KG EPHEM KM TARGE Z 26203030095799E+38 24059678698952E+01	.31153C.705c271c+CE .472224C\$1631u2E+U7 .36301474462866E+01 NAGAITUEF .5545G41445345C-C5 .2cc93373uu4u3c-u9 .5627107Cb04\$18E+UE 3. RY BOUY Stn ERIS BCOY ENCKE T JODY ENCKE
APTH FCSTTICH VELCOTTY ACKE PCTITICH VELCOTTY ACCEPTATIONS PIPACY ECCY PSTUNCTING BECTIONS PROJET ASIATION PRECOUPE ULTAN DATE Z MYS FFCP LAUNCH- AYS FACH CUTCFF- VC PELATIVE STATES UN PCLITICH APTH PCSITICH	16169776384010E+C8182814348916954+C23233917666.5146+07 -27283369176535E+01 X41366584114137£-C554805230111285E-C6 C- 444535.6078£515 14.54685485 X -10385226861993E+C933454420666578F+08192370372815174+08	25261240667272E+08 25179515980974c+02 25898623935566E+07 23485280968867E+01 Y 35470438506568E-05 14084767600000000000000000000000000000000	22J-58E5508362L+01 17035429760371E+07 . 1308533405240+E+01 Z 10269654125149E-05 1354+6039170592-09 2. 14841535032236E-06 3. PRIMA KG PRIMA KG EPHEM KM TARGE Z . 282203030095799E+08 24459678698952C+01	.31153c.705c271c+CE .472224c91631u2E+U7 .36301474462866E+01 NAGAITUUE .5545C431445345c-C5 .2c693373uu443c-u9 .5927107C6045186-E 3. RY BOUY SUN ERIS BCOY ENCKE T JOOY ENCKE 19659479J277476+09 .31542961554867E+C2 .42353072556544E+08
APTH FCSITICH AGRE FCSITICH VELOCITY VELOCI	16169776384010E+C8182214348916951+C23223917666.5144+07 -27280369176535E+01413665801141371-C5054805236121285E-C6 C0 444535.60788515	- 25261240667272E+08 - 25179515980374c+02 - 25898E23935566E+07 - 234852805E8867E+01 Y - 35470438506568E-05 - 14684767615150E-09 - 173051575453752-06 CCNTRCL FHASE 8 PRESENT S/C MASS- 1465.00829206 POMER AVAILABLE 20.80045030 Y - 5900005304544E+38 - 38149663063193E+00	223.5865508362.+01 17035429766371E+07 .12085334652464E+01 Z 10269634125149E-05 1354-6039170592-09 >. 14841535032236E-26 3. PRIMA KG EPHEM KM TARGE Z 26203030095799E+38 24059678698952E+01	.31153c.7o5c271=+CE .472224c91631u2E+U7 .3630147446286EE+01 NAGNITUEF .5545041445345c-C5 .2cc693373u4431-UE .5527117660451EE+UE 3. RY BOUY SLN ERIS BCOY ENCKE T BOOY ENCKE HASNITUE .151534791277476+09 .31142961554267E+C2
APTH FCSTTICH VELCOTTY ACKE PCTITICH VELCOTTY ACCEPTATIONS PIPACY ECCY PSTUNCTING BECTIONS PROJET ASIATION PRECOUPE ULTAN DATE Z MYS FFCP LAUNCH- AYS FACH CUTCFF- VC PELATIVE STATES UN PCLITICH APTH PCSITICH	16169776384010E+C8182814348916954+C23233917666.5146+07 -27283369176535E+01 X41366584114137£-C554805230111285E-C6 C- 444535.6078£515 14.54685485 X -10385226861993E+C933454420666578F+08192370372815174+08	25261240657272E+08 25179515980374c+02 25898623935566E+07 23485280568867E+01 Y 35470438506568E-05 14.8847676665136E-09 17305157545175E-06 CCNTRCL FHASE 8 PRESENT S/C PASS- 1465.00829200 POMER AVAILABLE 23.80045030 99200093095444E+38 38149663063193E+03 24598405581122E+08	22J-58E5508362L+01 17035429760371E+07 . 1308533405240+E+01 Z 10269654125149E-05 1354+6039170592-09 2. 14841535032236E-06 3. PRIMA KG PRIMA KG EPHEM KM TARGE Z . 282203030095799E+08 24459678698952C+01	.31153c.7o5c271c+CE .472224c91631u2E+G7 .3630147446286EE+01 NAGNITUEF .5545C31445345c-C5 .2cc9337304432-U9 .561711706u9518E+UE 3. RY BOUY SLN ERIS BCOY ENCKE T BOOY ENCKE 131542961554867764E+08 .31242961554867761E+02
APTH FCSITICN VELOCITY AGRE FCSITION VELOCITY AC ACCELEFATIONS PRIMAPY ECCY ENTURENCE BUCIES APJUT ASSISTICH PRESSURE ULTAN DATE AYS FACH LAUNCH- AYS FACH CUTCFF- AG PELATIVE STATES UN POLITICA VELOCITY APTH POSITION	16169776384010E+C8182214348916992+C23223917666.5144.07 -27280369176535E+01 413605841141374-C503477447175732-10348C5230121285E-C6 C2 444535.607825; y/a.9531.515 14.54689485 16323703/2815174+6818339576756821E+02	25261240667272E+08 25179515980374c+02 25898E23935566E+07 234852805E8867E+01 Y 35470438506568E-05 140847676053050-09 173051575453756-06 CCNTRCL FHASE 8 -PRESENT S/C FASS- 1465.00829200 FOMER AVAILABLE 23.88045030 Y 59200053095844E+38 381496930633193E+00 24598405581;22E+08 25345479202.75E+32	223.5865508362L+01 17035429766371E+07 . 1208533465240+E+01 Z 10269634125149E-05 1354-603917059C-09 14841535032236E-06 3. KG PRIMA KG EPHEN KM TARGE Z 28263030095799E+08 24055078098952E+01	.31153c.705c271c+CE .472224c91631u2E+U7 .36301474462866E+01 NAGAITUUE .5545C431445345c-C5 .2c693373uu443c-u9 .5927107C6045186-E 3. RY BOUY SUN ERIS BCOY ENCKE T JOOY ENCKE 19059479J277476+09 .31542961554867E+C2 .42353072556544E+08
APTH FCSITICN AGKE FCSITICN POWER FCSITICN POWER FCSITICN POWER FCSITICN POWER FCSITICN ASSEMBLY ASSEMBLY ASSEMBLY APTH PCSITICN PCSITICN APTH PCSITICN VELCCITY APTH PCSITICN VELCCITY APTH PCSITICN VELCCITY APTH PCSITICN VELCCITY	16169776384010E+C8182314348516952+C23223917666.5144-07 -27280369176535E+01 4136058401141374-C560577447175734-1054805236111285E-C6 C. 444535.60742515 14.54689485 103454420666578F+02152370372815174-0818139576756821E+0227848489017542F+07 -255437774824342+C1	- 25261240667272E+08 - 25179515980374E+02 - 25898E23935566E+07 - 234852805E8867E+01 354704385C6568E-05146847676C5313CE-0917305157545375E-06 CCNTRCL FHASE 8 PRESENT S/C FASS- 1465.008292CG FOMER AVAILABLE 23.80045030 992009309344E+38381496930E3193E+0025345479222.75E+322548950024976EE+0722840585091.83E+01	223.5865508362.+0117035429760371E+07 .12085334052404E+01 -210269634125149E-05135446039170592-0914641535032236E-08 3. PRIMA KG PRIMA KG EPHEMI TARGE 2 -26203030095799E+0824055078096952E+0114853219127159E+07 .12776316160602E+01	.31153c.7o5c271c+CE .47222c51631u2E+G7 .363014746286EE+01 NAGNITUUF .5545C31445345c-C5 .2ccb93373u443c-u9 .55271176bu4518E+UE 8. RY BOUY SLN ERIS BCOY ENCKE T JODY ENCKE .19658479317747c+09 .315429615548676+C2 .4265307255657761E+D2 .436833457113c+G7 .36E51133355711C+01
APTH FCSITICH AGKE FCSITICH VELOCITY ACCEPTATION PIMAPY ECSY POLITICH ASSENDED BECIES AVS FECH LAUNCH- AVS FECH LAUNCH- AVS FECH LAUNCH- AVS FACH CUTCFF- VELOCITY APTH PCSITICH VELOCITY ACCELERATIONS	16169776384010E+C8182314348916954-C23223917666.5144-07 -27280369176535E+01 413665841141371-C561367744717573:-1054865230121285E-C6 C- 444535.60782515548625485 161355767568216-02161355767568216-0227848489012542C+07 -259437774824342+C1	- 25261240667272E+08 - 25179515980374c+02 - 25898E23935566E+07 - 234852805E8867E+01 Y - 354704385C6568E-05 - 140847676C5130E-09 - 173051575451752-06 CCNTRCL FHASE 8 - PRESENT S/C MASS- 1465.008292C6 FOMER AVAILABLE 29.80045030 Y - 590005304544E+08 - 381496630E3193E+00 - 2498405581:22E+08 - 25345479222.75E+32 - 2548950024976EE+07 - 22240585091.83c+01	223.5865508362.+01 17035429766371E+07 . 12085334652404E+01 Z 10269634125149E-05 1354-6039170592-09 14841535032236E-06 3. KG PRIMA KG EPHEM TARGE 2 24053030.95799E+08 24055078098952E+01 14853219127159E+07 12776316160602E+01	.31153c.705c271c+CE .472224c91631u2E+U7 .3630147446286EE+01 NAGNITUEF .5545041445345c-C5 .2cc693373u4442-9 .55271176buy518E+UE 8. RY BOUY SLN ERIS BCOY ENCKE T BOOY ENCKE 1354791277476+09 .314296155467E+C2 .42353072569534E+08 .3126552667761E+D2 .4328530457113c+GZ
APTH FCSITICN AGKE FCSITICN POWER FCSITICN POWER FCSITICN POWER FCSITICN POWER FCSITICN ASSEMBLY ASSEMBLY ASSEMBLY APTH PCSITICN PCSITICN APTH PCSITICN VELCCITY APTH PCSITICN VELCCITY APTH PCSITICN VELCCITY APTH PCSITICN VELCCITY	16169776384010E+C8182314348516952+C23223917666.5144-07 -27280369176535E+01 4136058401141374-C560577447175734-1054805236111285E-C6 C. 444535.607425155480523619362+C93454420666578F+0216139576756821E+0227648489017542F+07 -255437754824342+C1	- 25261240667272E+08 - 25179515980374E+02 - 25898E23935566E+07 - 234852805E8867E+01 354704385C6568E-05146847676C5313CE-0917305157545375E-06 CCNTRCL FHASE 8 PRESENT S/C FASS- 1465.008292CG FOMER AVAILABLE 23.80045030 992009309344E+38381496930E3193E+0025345479222.75E+322548950024976EE+0722840585091.83E+01	223.5865508362.+0117035429760371E+07 .12085334052404E+01 -210269634125149E-05135446039170592-0914641535032236E-08 3. PRIMA KG PRIMA KG EPHEMI TARGE 2 -26203030095799E+0824055078096952E+0114853219127159E+07 .12776316160602E+01	.31153c.7o5c271c+CE .47222c51631u2E+G7 .363014746286EE+01 NAGNITUUF .5545C31445345c-C5 .2ccb93373u443c-u9 .55271176bu4518E+UE 8. RY BOUY SLN ERIS BCOY ENCKE T JODY ENCKE .19658479317747c+09 .315429615548676+C2 .4265307255657761E+D2 .436833457113c+G7 .36E51133355711C+01

	.63788393E+08 42137165E+08 74111176E+04	01485961E+07 21848429E+04	.24087260E+08 .24087260E+08 77>57588E+03			
	J •	Ú.	0.			
	•	C.	0.	alika da jiha Barati.		
	•	•	C.			
		ů.	0.			
		Q.	G.			
		0.	0.		 	
	•	. C.	0.		• • • • • • • • • • • • • • • • • • •	
		v•	0.			<u> </u>
	.11740206E+09					•
	.49215205E+08					To the control of the
	.77652899E+04					
	•					•
					•	
			····			
	•					
	J.					
. VPE						
	- 39847204E+82	E7163725E+91	437G675GE+G1			
	.39847204±+02 .16519897E+02	67163725E+01 27891851E+JZ	43706750E+01 437067502+01			
			43706750E+01 -:43766750E+01 -11492303E+01			
	.10519897E+02 .2C482325E+01	27891851E+JZ .19519865E+01 0.	4376675.2+01 .11402303E+01 0.			
	.16519897E+02 .2C482325E+01	27891851E+JZ .19519865E+01 0.	-;437G67522+01 .114u23032+01 0.			
	.165[5697E+02 .2C482325E+01	27891851E+JZ .19519865E+01 0.	437667522+81 114023032+01 0.		5.5	
	.16515697E+02 .2C482325E+01	27891851E+JZ .19519865E+01 0. 0.	4376675.Z+01 .11402303E+01 0. 0.		<u> </u>	
	.16519697E+02 .2C482325E+01	27691851E+JZ .19519865E+01 0. 0.	437G67522+01 .114U23032+01 0. 0.		0,0	
	.16519697E+02 .2C482325E+01	27891851E+JZ .19519865E+01 0. 0. 0.	437667522+01 114023032+01 0. 0. 0.		ORIG OF P	
	.16519897E+02 .2C482325E+01	27891851E+JZ .19519865E+01 0. 0. 0. 0. 0.	437667522+01 .114023032+01 0. 0. 0. 0.		ORIGIN OF PO	
	.16519697E+02 .2C482325E+01	27891851E+JZ .19519865E+01 0. 0. 0.	437667522+01 114023032+01 0. 0. 0.		ORIGINA OR POOI	
	.16519697E+02 .2C482325E+01	27891851E+JZ .19519865E+01 0. 0. 0. 0. 0.	437667522+01 114023032+01 0. 0. 0. 0.		ORIGINAI OR POOR	
VR	.16519897E+02 .2C482325E+01	27891851E+JZ .19519865E+01 0. 0. 0. 0. 0.	437667522+01 114023032+01 0. 0. 0. 0.		ORIGINAI OR POOR	
VR	.16519697E+02 .2C482325E+01 	27891851E+JZ .19519865E+01 0. 0. 0. 0. 0.	437667522+01 114023032+01 0. 0. 0. 0.		ORIGINAL P. OF POOR PO	
, pr	.16519697E+U2 .2C482325E+01 	27891851E+JZ .19519865E+01 0. 0. 0. 0. 0.	437667522+01 114023032+01 0. 0. 0. 0.		ORIGINALI PA OE POOR E OL	
Ų.R.	.16519697E+02 .2C482325E+01 	27891851E+JZ .19519865E+01 0. 0. 0. 0. 0.	437667522+01 114023032+01 0. 0. 0. 0.		ORIGINAU PAG OR POOR QUAI	
ý R	.16519897E+02 .2C482325E+01 	27891851E+JZ .19519865E+01 0. 0. 0. 0. 0.	437667522+01 114023032+01 0. 0. 0. 0.		ORIGINAU PAGE	
Ve	.16519697E+U2 .2C482325E+01 	27891851E+JZ .19519865E+01 0. 0. 0. 0. 0.	4376675.L+01 .11402303E+01 0. 0. 0. 0. 0.		ORIGINAU PAGE I	
ya	.16519697E+02 .2C482325E+01 	27891851E+JZ .19519865E+01 0. 0. 0. 0. 0.	4376675.L+01 .11402303E+01 0. 0. 0. 0. 0.		ORIGINAL PAGE IS OF POOR BUALTIN	
y RE	.16519897E+02 .2C482325E+01 	27891851E+JZ .19519865E+01 0. 0. 0. 0. 0.	4376675.L+01 .11402303E+01 0. 0. 0. 0. 0.		ORIGINAL PAGE IS OF FOOR QUALITY	
VR	.16519697E+02 .2C482325E+01 	27891851E+JZ .19519865E+01 0. 0. 0. 0. 0.	4376675.L+01 .11402303E+01 0. 0. 0. 0. 0.		ORIGINAL PAGE IS OF POOR QUALTIX	

Typich	VIRUE3984/244E++		437u6750E+61			
#FCHEF .2110000014-02 17 -:55115137E-06 -:263625:9E-36 -:06570613E-06 -:544212E-06 -:5754832E-06 -6927467E-07 -:70475594E-07 -:269222E-08 :2383370E-06 -:254331E-06 -:656259E-06 -5233370E-06 -:254331E-06 -:656259E-06 -527467E-07 -:70475594E-07 -:269222E-08 -22833370E-06 -:35115137E-06 -:656259E-06 -527467E-07 -:70475594E-07 -:269222E-08 -22833370E-06 -:0.		· -	* * * * * * * * * * * * * * * * * * *	ومتفريديات والمسيوات والويور يستثثث بالتباديات		
- 5511537F-16 - 263625-9E-16 - 26746716-10 - 262746716-07 - 70475594E-17 - 264629220E-08 - 23833570C-06 - 25744822E-06 - 692746716-07 - 70475594E-17 - 2646259220E-08 - 23833570C-06 - 25744822E-06 - 257446718-06 - 25744822E-06 - 257446718-07 - 70475594E-07 - 264629220E-08 - 23833570E-06 - 276475994E-07 - 264629220E-08 - 23833570E-06 - 276475994E-07 - 264629220E-08 - 23833570E-06 - 28833570E-08 - 276475994E-07 - 264629220E-08 - 25159666E-09 - 34046056E-09 - 46508752E-08 - 11747352E-08 - 2799937E-04 - 28833570E-08 - 279993E-08 - 28833570E-08 - 288	PECHER .21303000L+	2				
.254431212-66575488321-06 .692746718-07 -70475594-07 -246592920-08 .23833707-06 USAV -55115137E-0663625919-0616570613E-06 .254431812-0657548232E-06 .692746718-07 -70475948-07 -24692920-08 .238335708-06 FMI -599993708-00 .9935937E-04 .25159666E-0434846056L-09 .46508752E-08 .11747352L-08 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0						
-70475594-6/J -24692920E-08					The state of the s	
CTSAYF						•
5115137E-0663625U9E-0616570613E-06		692920E-08 .23833	3570c-06			
-25443812-06 -357548326-08 69274678C-07 -70475594C-07 -246892920E-08 23833578E-06 FMI -95999370E+00 .99359937E-04 .25159666E-06 -34846056c-09 .46508752E-08 .11747352C-68 -0.		3635"05-06" - 46530	1542F-05			
FMI						
FMI						· · · · · · · · · · · · · · · · · · ·
C						
0.	The second secon					

C.	0.			=		. 7.5
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0				·117473522-08	-173998262-38	304986822-88
999991252+00	C.	G.				
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0	0.	0.			= :	
0.						
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0						7.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0						
C. C						
C. C		-38344596E-04	.99393314E+DJ		c	
.1000000000000000000000000000000000000						
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0						
0.					T 1	
C.						
0.						
C.	0.	0.	Ú.	0.	. 0 •	
749241JoE-16371659282-1612195593E-16 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.	0.	0.	-1000000CE+01			· C.
.99499378E+00 .99646920E-04 .2511459E-04 -34684333E-09 .46430966E-08 .1736487E-0845557618E-1559862767E-1623769617E-1537169928E-16 .35171636E-1638538031E-17 C.	¢	6.				
45557618E-1559862707E-1623769617E-153716928E-16 .35171636E-1638538U31E-17 C. C. Q. Q99046920E-04 .13U00739E+01 .36726C0Ec-C4 .4643C966E-08 .33905944E-J8 .17375866E-0826346634E-1523769617E-15 .21368527E-1513195593E-1638538U31E-17 .44752502E-18 J. U25111459E-04 .36726006E-u4 .99993535E+00 .11736487E-08 .17375866E-083444511E-08 C. Q. Q34525677E-1116052853E-1156978615E-12 039539126C+JJ .10153485c-03 .2559u163E-04 Q.						
C.						
.4643696E-08 .33909944E-J8 .17375E6E-0826346634E-1523769617E-15 .21368527E-1513195793E-1638538031E-17 .44752502E-16 J. .25111459E-04 .36726006E-u4 .99993535E+00 .11736407E-08 .17375866E-0834441511E-08 0.						
-:13195593E-16 -:38538031E-17 .44752502E-16						
0.						
0.						
.395391261+30 .101534852-03 .25590163E-04 0. C. U163528532-11 .151947322-11167974602-12 0. 0. 0. 0. 0. U432000302+C5 C10153485E-03 .10000756E+01 .353377362-04 O. 0569786152-1216797460E-12 .1933094-2-11		0.	0.			
16J52853:-11 .15194732:-1116797460:-12 U. 0. U.		0.	3550. 1635-01			
043200030c+C5				The state of the s		
05697861#2-1216797460E-12 .1933194-E-11						
	the first of the contract of t					
	6.	0.	o.	0.	0.	.43200 CLGE+05

```
STRAJ
 ISTHF=2.
 SEND TRAJ - STHFILE READ
PSGODSEP
   IPFORH = 1.
                                            P(3.3) = 10000..
   P(1.1) = 10000..
                       P(2.2) = 10000..
                                            P(6+6) = .005+
                       P(5.5) = .005.
   P(4.4) = .005.
                        PS(2.2) = .035.
                                            PS(3,3) = .035.
   PS(1.1) = .022.
                                           PS(6.6) = 3000...
PS(9.9) = .001.
   PS(4,4) = 3000.
                        PS(5.5) = 3000.
                        PS(8.8) = .001.
   PS(7.7) = .001.
   IAUG = 9+1+
   IAUG(18) = 9-2.
  NSCHED=4.
MPFREQ=11-0.
  EPSIG=.035.29.01.
TCURR=563.. TFINAL=570..
  NGUID=1.
  TGUID-567.. TOELAY-5.
  TCUTOF=587.
  TIMETA-553.5. IGPOL=1.
 S END GODSEP--TEST CASE
                                       1212
  563.5
             570.
  564.
             570.
                                      2002
                                                                                              QUALITY
  564.
                                       2121
             570.
                                       4123
             570.
  563.5
```

			TRA	JECTORY INITIA	LIZATION				
					**********	•••••••	**********	******	*******
INITIAL EFC	CH CREFEPENC	E DATE)							
JULTAN	DATE	2443956.65478000	184						
CALENC	AR DATE	1979 HAR" 24	3 HR 42	MIN 52.9928 SE	cs		· 		
TRAJECTORY	STAFT LPOCH	543.00000031	OO DAYS AFTER	THE INITIAL ER					
	DATE	2444499.65470101	104			- 1 To 1			
		1540 SEP 17		MIN 52.5920 SE					
TRAJECTORY		593.500000000		HE INITIAL EPC	CH				
	DATE	2444550.1547830	104		1				
UPLENT.	AK UAIL	1500 NGV 6							•
INITIAL SIA	TE VECTOR AT	543.000000	000 DAYS AFTE	R THE REFERENCE	EPOCH	orden op anderson fig. gage op			
PCSITIO	CN	.19483#89554940E	.09	840846535668606	F+38	.314215402868	LOFARS	.21+5.1387	
AETCCI.		. 22404272871254E4		818885592239268		143483342769		.2385:9234	
PS MASS		1551	.35880000000 W	G				1200703234	2347648
CHAULT VELCCIT			. 41400CJ88C K						
ECTRIC FCHER I		21	.6500000000 K .6430003000	W					
RUSTEF EFFICT	-:-				······································				
CIATICA PPESSI	LRE COLFFICI	ENT -1							
	VITATING ECO	IES					· ·	···	
SLN									
EPCKE.			·						4
- TAPEST DIALE	ET TO ENEVE		•						
. TARGET PLANE	ET IS ENCKE		•						
	ET IS ENCKE	.0500			-				
		.0500							
INTEGRATION	STEP FACTOR								
INTEGRATION FERENCE THRUST	STEP FACTOR T CONTPOLS THRUST PHASE	E TARUST PHASE	THRUST PHASE	THRUST PHASE		THRUST PHASE	NUMBER		
INTEGRATION FERENCE THRUST PHASE	STEP FACTOR T CONTPOLS THRUST PHAST END TIME	E TARUST PHASE	CONE ANGLE	CLOCK ANGLE	CONE RATE	CLOCK RATE	OF		
INTEGRATION FERENCE THRUST	STEP FACTOR T CONTPOLS THRUST PHASE END TIME (GAY)	E TARUST PHASE THROTTLING	CONL ANGLE (CEG)	CLOCK ANGLE	CONE RATE (DEG/SEC)	CLOCK RATE (DEG/SEC)	OF THRUSTERS		
INTEGRATION FERENCE THOUST THEUST PHASE AUMEER	STEP FACTOR T CONTPOLS THRUST PHASE END TIME (GAY) 64.00001	E TARUST PHASE THROTTLING	CONE ANGLE (CEG)	GLOCK ANGLE (DEG)	CONE RATE (DEG/SEC)	CLOCK RATE (DEG/SEC)	OF THRUSTERS		
INTEGRATION FERENCE THRUST PHASE	STEP FACTOR T CONTPOLS THRUST PHASE END TIME (GAY) 64.03001	E TARUST PHASE THROTTLING THROTTLING THROTTLING THROTTLING THROTTLING	CONE ANGLE (CEG) 0.CGUDDO 63.10000J	CLOCK ANGLE (BEG) 0.000000 224.600000	CONE RATE (DEG/SEC) 0.000000 0.00000	CLOCK RATE (DEG/SEC) 0.000000 0.300303	OF THRUSTERS 0.000007		
INTEGRATION FERENCE THOUST THEUST PHASE AUMEER	STEP FACTOR T CONTROLS THRUST PHASE END TIME (GAY) 64-03003 140J003	E 7ARUST PHASE THROTTLING 0	CONE ANGLE (CEG) 0.000000 64.100000 75.000000	CLOCK ANGLE (BEG) 0.000000 224.60CG00 252.00G00	CONE RATE (DEG/SEC) 0.000000 0.000000	CLOCK RATE (DEG/SEC) 0.000000 0.000000	OF THRUSTERS 0.000.00 0.000.00 0.000.00		
INTEGRATION FERENCE THRUST THRUST PHASE AUREER	TEP FACTOR TOURIST PHASE END TIME (GAY) 64.00001 140.0000	E 7ARUST PHASE THROTTLING 0 0.000000 0 1.000000 0 1.000000	CONE ANGLE (CEG) 3.004000 68.100703 75.000000 85.334000	CLOCK ANGLE (DEG) 0.000000 224.60C000 252.000100 269.000000	CONE RATE (DEG/SEC) 0.000000 0.000000 0.000000	CLOCK RATE (DEG/SEC) 0.000000 0.000000 0.000000	OF THRUSTERS 0.000000 0.003400 0.003000		
INTEGRATION FERENCE THOUST THEUST PHASE AUMEER	STEP FACTOR T CONTPOLS THRUST PHAST END TIME (GAY) 64.03003 1401003 2-93.09003 470.03013 525.00013	E 7ARUST PHASE THROTTLING 0 0.300000 0 1.000000 0 1.000000 0 1.000000	CONE ANGLE (CEG) 1.001000 68.100100 75.010000 85.334000 120.501000	CLOCK ANGLE (DEG) 0.000000 224.60CG00 252.00G00 269.00C00 269.00C00	CONE RATE (DEG/SEC) 0.030600 0.030100 0.000100 0.000300 0.034503	CLOCK FATE (DEG/SEC) 0.000000 0.000000 0.000000	OF THRUSTERS 0.000.03 0.003.00 0.033.00 0.033.00 0.030.00		20
INTEGRATION FERCINCE THOUS THRUST PHASE AUPEER	STEP FACTOR T CONTPOLS THRUST PHASE END TIME (GAY) 64.03003 140.03003 2-0.03003 470.03033 525.00033	E 7ARUST PHASE THROTTLING 0	CONE ANGLE (CEG) 0.CG)000 63.10000 75.00000 85.334000 120.501000 129.674300	GLOCK ANGLE (BEG) 0.000003 224.60CC03 252.006903 269.001003 269.742703 272.209203	CONE RATE (DEG/SEC) 0.030600 0.030100 0.00000 0.000000 0.034501 J.033603	CLOCK FATE (DEG/SEC) 0.0000000 0.000000 0.000000 0.000000	OF THRUSTERS 0.000.09 0.000.00 0.000.00 0.000.00 6.000.00		OF.
INTEGRATION FERCINCE THOUS THRUST PHASE AUPEER	STEP FACTOR T CONTPOLS THRUST PHASI EMO TIME (GAY) 64.01001 140.1001 2-0.01003 470.01013 525.00010 567.01003	E 7ARUST PHASE THROTTLING 0	CONE ANGLE (CEG) 63.100000 75.000000 85.334000 120.501000 129.674300	CLOCK ANGLE (DEG) 0.000000 224.60CC05 252.00000 269.00C000 268.742700 272.249200	CONE RATE (DEG/SEC) 0.0300.CO 0.0300.CO 0.0300.OC 0.034503 J.833060 0.0800.OC	CLOCK RATE (DEG/SEC) 0.000000 0.000000 0.000000 0.00000 0.00000	OF THRUSTERS 0.000209 0.00100 0.00020 0.00020 6.00000		OF T
INTEGRATION FERENCE THRUST THRUST PHASE AUREER	STEP FACTOR T CONTPOLS THRUST PHASE END TIME (GAY) 64.03003 140.03003 2-0.03003 470.03033 525.00033	E 7ARUST PHASE THROTTLING 0	CONE ANGLE (CEG) 0.CG)000 63.10000 75.00000 85.334000 120.501000 129.674300	GLOCK ANGLE (UEG) 0.000000 224.60C000 252.00C000 269.00.000 268.742700 272.206200 78.022700	CONE RATE (DEG/SEC) 0.030600 0.030400 0.030400 0.034503 3.03360 0.034503 0.034503	CLOCK FATE (DEG/SEC) 0.000000 0.000000 0.000000 0.000000 0.000000	OF THRUSTERS 0.000.07 0.000.00 0.000.00 0.000.00 0.000.00		0.1 40
INTEGRATION FERENCE THRUST PHASE AUPER 1 2 3 4 5 6 7 8 9	TEP FACTOR TOURIST PHAST EMO TIME (GAY) 64.03003 140.1001 2-0.03000 470.03030 525.00010 567.00020 577.00000 800.010000	E 7ARUST PHASE THROTTLING 0	CONE ANGLE (CEG) 63.100001 75.00000 85.334000 129.674300 129.674300 156.881400 0.000000	GLOCK ANGLE (UEG) 20.000003 224.60CC03 252.000003 269.00C003 268.742703 272.249203 8C.30C303 78.022703 C.000003	CONE RATE (DEG/SEC) 0.030000 0.030000 0.030000 0.03000 1.03000 0.030000 0.030000	CLOCK RATE (DEG/SEC) 0.000000 0.000000 0.000000 0.00000 0.00000 0.00000 0.000000	OF THRUSTERS 0.000009 0.00100 0.00000 0.00000 6.00000 7.00000 0.00000		OF FO
INTEGRATION FERCINCE THRUST PHASE AUMBER 1 2 3 4 5 6 7 8 9	TEP FACTOR TOURIST PHASE END TIME (GAY) 64.03001 140.0301 200.03000 470.03030 525.0001 567.0303 577.00003	E 7ARUST PHASE THROTTLING 0	CONE ANGLE (CEG) 1.000000 75.000000 85.334000 120.501000 129.674300 151.643000 156.881400 0.000000	GLOCK ANGLE (UEG) 0.000003 224.60C000 252.00G000 269.00.0003 260.742900 272.206203 70.022703 C.00.0003	CONE RATE (DEG/SEC) 0.030000 0.030000 0.030000 0.03000 1.03000 0.030000 0.030000	CLOCK RATE (DEG/SEC) 0.000000 0.000000 0.000000 0.00000 0.00000 0.00000 0.000000	OF THRUSTERS 0.000009 0.00100 0.00000 0.00000 6.00000 7.00000 0.00000		OF TOOM
INTEGRATION FERCINCE THRUST PHASE AUPPER 1 2 3 4 5 6 7 8 9 DV PARAMETERS PLANET RACT	THRUST PHASE END TIME (GAY) 64.03003 140.0303 20.03000 470.03033 525.00030 567.0303 577.00203 587.0303	E 7ARUST PHASE THROTTLING 0	CONE ANGLE (CEG) 10.00000 6A.100000 75.000000 150.501000 120.501000 129.674300 156.841400 0.0000000	GLOCK ANGLE (DEG) 0.000003 224.60C000 252.00600. 269.00.003 268.742703 272.209203 8C.00C0003 76.022703 C.000003	CONE RATE (DEG/SEC) 0.030000 0.030000 0.030000 0.03000 1.03000 0.030000 0.030000	CLOCK RATE (DEG/SEC) 0.000000 0.000000 0.000000 0.00000 0.00000 0.00000 0.000000	OF THRUSTERS 0.000009 0.00100 0.00000 0.00000 6.00000 7.00000 0.00000		OF TOOK (
INTEGRATION FERCINCE THRUST THRUST PHASE AUPER 1 2 3 5 6 7 8 9 07 PARAMETERS PLANET RACT	TEP FACTOR T CONTPOLS THRUST PHASI END TIME (GAY) 64.03001 140.1001 200.09000 472.00000 567.00000 567.00000 567.00000 600.000000	E 7ARUST PHASE THROTTLING 0	CONE ANGLE (CEG) 1.00000 64.100001 75.00000 85.334000 129.674300 129.674300 157.640000 0.000000000000000000000000000000	GLOCK ANGLE (10EG) 2.000000 2.24.60C000 2.52.006000 2.69.000.000 2.68.742700 2.72.206200 80.000000 0.0000000000000000000000	CONE RATE (DEG/SEC) 0.030000 0.030000 0.030000 0.03000 1.03000 0.030000 0.030000	CLOCK RATE (DEG/SEC) 0.000000 0.000000 0.000000 0.00000 0.00000 0.00000 0.000000	OF THRUSTERS 0.000009 0.00100 0.00000 0.00000 6.00000 7.00000 0.00000		
INTEGRATION FERCINCE THRUST PHASE AUPEER 1 2 3 4 5 6 7 8 9 OV PARAMETERS PLANET RACT PLANET GFAN	TEP FACTOR TOURIST PHAST END TIME (GAY) 64.03003 140.03000 470.03000 470.03000 567.03030 567.03030 603.0300000 AND ORBITAL TUS	E 7ARUST PHASE THROTTLING 0	CONE ANGLE (CEG) (CEG) 63.100001 75.00000 15.30000 129.674300 157.643000 157.643000 157.643000 157.643000 157.643000 157.643000 157.643000 157.643000 157.643000 157.643000 157.643000 157.643000 157.643000 157.643000 157.643000 157.643000 157.643000 157.643000	GLOCK ANGLE (10EG) 20.000000 224.60CC000 252.006000 269.001000 269.702700 8C.00C100 70.002700 C.00.00000 R ENCKE AT JUL	CONE RATE (DEG/SEC) 0.030000 0.030000 0.030000 0.03000 1.03000 0.030000 0.030000	CLOCK RATE (DEG/SEC) 0.000000 0.000000 0.000000 0.00000 0.00000 0.00000 0.000000	OF THRUSTERS 0.000009 0.00100 0.00000 0.00000 6.00000 7.00000 0.00000		
INTEGRATION FERCALE INDUS THEUST PHASE AUMBER 1 2 3 4 5 6 7 8 9 OY PANAMETERS PLANET RACT PLANET SPEE PLANET SPEE PLANET SPEE PLANET SPEE	TEP FACTOR TOURIST PHASE END TIME (GAY) 64.03003 140.0303 525.0003 527.0033 567.0333 577.00323 AND ORBITAL TUS ERE AXIS .3310	E 7ARUST PHASE THROTTLING 0	CONE ANGLE (CEG) 1.00000 63.100000 85.334000 120.501000 129.674300 156.881400 0.000000000000000000000000000000000	GLOCK ANGLE (UEG) 0.000003 224.60C000 252.00690. 269.001003 268.742903 272.206203 70.022703 C.000003 R ENGKE AT JUL	CONE RATE (DEG/SEC) 0.030000 0.030000 0.030000 0.03000 1.03000 0.030000 0.030000	CLOCK RATE (DEG/SEC) 0.000000 0.000000 0.000000 0.00000 0.00000 0.00000 0.000000	OF THRUSTERS 0.000009 0.00100 0.00000 0.00000 6.00000 7.00000 0.00000		
INTEGRATION FERCALE IPOUS THEUST PHASE AUPER 2 3 4 5 6 7 8 9 DY PARAMETERS PLANET RACT PLANET SPEPLANET GFAL SEMI-PAJOR ECCENTRICT	THRUST PHASE END TIME (GAY) 64.03003 140.03003 2-0.03000 470.0301 557.032 577.02223 577.02223 603.03030 AND ORBITAL TUS ERE VITATIONAL AXIS .331 7Y .847	E 7ARUST PHASE THROTTLING 0	CONE ANGLE (CEG) 10.00000 63.100000 15.334000 129.674300 129.674300 156.841400 0.0300000 EN READ-IN FO 1000000000000000000000000000000000000	GLOCK ANGLE (10EG) 0.000003 224.60CG00 252.00690. 269.00.0003 272.209200 8C.00C0003 R ENCKE AT JUL **3/SEC**2 KM/JS 1.0/JC	CONE RATE (DEG/SEC) 0.030000 0.030000 0.030000 0.03000 1.03000 0.030000 0.030000	CLOCK RATE (DEG/SEC) 0.000000 0.000000 0.000000 0.00000 0.00000 0.00000 0.000000	OF THRUSTERS 0.000009 0.00100 0.00000 0.00000 6.00000 7.00000 0.00000		
INTEGRATION EFERENCE IPOUS THEUST PHASE AUPEER 1 2 3 4 5 6 7 8 9 100 PARAMETERS PLANET RACT PLANET SPHE PLANET SPHE PLANET GFAV SEMI-PAJOR ECCENTRICITY INCLINATION	T CONTPOLS THRUST PHAST END TIME (GAY) 64.03001 140.3000 470.03000 470.03000 567.0300 567.0300 567.0300 603.03000 ANO ORBITAL TUS ERE VITATIONAL 3	E 7ARUST PHASE THROTTLING 0	CONE ANGLE (CEG) (GLOCK ANGLE (10EG) 1.000003 224.60CC03 252.00G30 269.001.003 268.742703 272.209203 8C.30C30C 78.022703 C.000003 R ENCKE AT JUL **3/SEC**2 KM/J3 1.0/JC UEG/JC	CONE RATE (DEG/SEC) 0.030000 0.030000 0.030000 0.03000 1.03000 0.030000 0.030000	CLOCK RATE (DEG/SEC) 0.000000 0.000000 0.000000 0.00000 0.00000 0.00000 0.000000	OF THRUSTERS 0.000009 0.00100 0.00000 0.00000 6.00000 7.00000 0.00000		
INTEGRATION FERENCE THOUS THEUST PHASE AUPER 2 3 4 5 6 7 8 9 DV PARAMETERS PLANET RACT PLANET SPEPLANET SPEPLANET SPEPLANET SPEPLANET SPEEPLANET SPEEPLANET SPEPLANET SPEPLANET SPEPLANET SPEPLANET SPEPLANET SPE	TEP FACTOR TOURT PHASE END TIME (GAY) 64.03001 140.0301 200.03000 470.03030 567.03030 567.03030 567.03030 AND ORBITAL TUS AXIS 331.77 647.0300	E 7ARUST PHASE THROTTLING 0	CONE ANGLE (CEG) 1.00000 63.10000 85.334000 120.501000 129.674300 151.643000 156.881400 0.000000000000000000000000000000000	GLOCK ANGLE (10EG) 0.000003 224.60CG00 252.00690. 269.00.0003 272.209200 8C.00C0003 R ENCKE AT JUL **3/SEC**2 KM/JS 1.0/JC	CONE RATE (DEG/SEC) 0.030000 0.030000 0.030000 0.03000 1.03000 0.030000 0.030000	CLOCK RATE (DEG/SEC) 0.000000 0.000000 0.000000 0.00000 0.00000 0.00000 0.000000	OF THRUSTERS 0.000009 0.00100 0.00000 0.00000 6.00000 7.00000 0.00000		UAL

								JOB NO. RUN BAT	É 08/39/1	74	
********	**************			***********	*******	********	*******	******	********	14444	
	MECULEO TRAJECTOR M FILE TPAJECTOR		COO CAYS								
		, , , , , , , , , , , , , , , , , , , ,	300 0213					•			
TOTAL .	CO FIELD LENGTH =	070200 GCTAL								·	
	OF BLANK COMMCH =										
ME KELLET	HERY AND PROPAGAT	*****	nin'e	<u> </u>							
MENSOPI	PERI AND PROPAGAI	TOU EASH! SCHOOL	hore			•					
FF(W EST ECONO 35V		TO DAVE TH TH	CJENENTS DE		DAVE					·
	M 564.00.30 JAY	S TO 570.000	JO CAYS IN IN	CREPENTS OF	1.00000	CAYS	CODE NO.	27.05			
FF(F 564.00030 JAY	75 TO 570.000 75 TO 570.000 75 TO 570.000 75 TO 570.000	OO DAYS IN IN	CKEMENTS OF	1.09060	DAYS	CODE NO.	2121			
7.50	P 563.50000 DAY	2 10 274.666	CO DATS IN IN	CKERENIS OF	• 50000	DAYS	CODE NO.	4123			
	رزر پر مربوع استدیات استانات	PETOR PURNTED	· · · · · · · · · · · · · · · · · · ·		····				·		
	O ETGENA	ECTOR EVENTS									_
	1 THRUST	EVENTS								•	
	ا چارون کا میکند کی ایک کا	TIME (DAYS)	. هے پی چہ مستقد کا مستقد ا								
	EASVI	TIME TUATS!	1165								
<u> </u>		567.000	0								
	,	MARCE EVENTS									
		DANCE EVENTS						· · · · · · · · · · · · · · · · · · ·			
	FVFNT	TIME (DAYS)		F TIME (DATS)		GUIDANCE CELAY TIN	E IDAVS)	G	UIDANCE	READ CONT	ECI
	remarks a hour wheel) 				POLICY	-	
		566.500 570.330		587.000 570.000			.500 .000		1	0	
		nam ampada punis pi umba-ambi kulur ku		•		 -				 	
	O PREDI	CTION EVENTS				<u> </u>	1				
FII	TEFING ALGORITHM	IS KALMAN-SCHM	IDT			1.5					
······································	ASUREHENT WHITE N	OISE STANDARD	DEVIATIONS								-

۶-	HAY DOPPLEP	.100000	COC+C1 PH/S F	ER 1 MIN SAM	PLE AT 1	2.0000 CO	UNTS/DAY				
	MAY PANGE	.300000	LÚE+C1 METERS								
3.	HAY RANGE	.100033	uge+02 PLTERS	FREG BRIFTS							
	TPUTH	.160030	GOE+u4 PICRC-	RACIANS							
E	EVATION	.150000	COE+C4 PICRC-	RACIANS							
Fi	AR-PLANET ANGLE	• 15 CORO	SUE+US PIÇRL. CG.+T3 MIČRC.	HACIANS							
									····		
C r	NTER-FINDING DY FT-ASCENSION CY CFCLIMATION	.300000	GOE+OL ARC-SE	CONDS							
	CY CECLINATION	.366060	00E+01 ARC-SE	CONUS							
E			LE SETUTE UTT	H THOSE AVATI				-01 DAYS			
T (LEFANCE ON PESHIN LEFANCE ON HESHIN	IG SCHEDULED TI	ME FOINTS WIT	H THOSE AVAIL	APLE ON ST	H FILE =	-10uE	ANT DALZ			
1(1(F)		IG SCHEDULED TIP THIN TOLERANCE	ME FGINTS WIT	H THOSE AVAIL	APLE ON ST	H FILE =	•10vE	TUZ UATS		•	•

STATICH LCCATE	ON CUORCINATES							•	
	PIN RACIUS" L	.CNGITUCE	Z-HEIGHT	-	LATITUDE				
	5200-234		3693.429		35.384				
3	4855.414 9264.135	356.333 149.136	4134.7EE -3680.233		-35.311				•
EQUIVALENT STATION E	RRORS (1 SIGHA))							
	RAUIUS 1.5.0000					ing services. Englisher			
LONGI	TUDE 3.00000 GHT '10.00000	HETERS HETERS		-					
YMAHIC NCISE PARAPET		en de la companya de La companya de la co					•		•
FROCESS	STO LE	•	CORRELATIO						
MAGNITUDE 1 CCNE 1 CLCCK 1	.35030.2+01	PER CENT -	.40CCODE+ :10CJGGE+ :10GGGUE+	OI UAYS					
									
		•					<u> </u>		
				- 		 			
				<u>. 100 </u>					
									
									
								-	
						•			

	RSS POSITION =	.17320508E+05 KM .8EE02540E+01 P/						700
				<u> </u>				ORIGINAL OF POOR
							•	女品
STA	TE PARA 1ETER	S						82
								第二
TANDARD DEV	IATIONS AND CORRECA	TICK CGEFFICIENTS						PAGE IS
	STC DEV	x	Y	Z	VX	VY	vz	
								2 0
×	.13650CCG±+65	17345446						
	-13000000000000	C-60100000	_1.00033630_					
2	.130C0CCGE+05	0.0000000	0.000000000	1.00060000				
VX	.5000000E-02	0.0000000	u.9650uJ60	0.00000000	1.00000000			
VY	.50.303.GE-32	0.00000000	0.00001000	0.00000000	G.00000000	1.00000000		· ·
٧Z	.5080C003E-32	0.40000330	3.00000000	0.0000000	0.00104000	C.00000000	1.00060000	
		managan na again an di an					i.	
ACCPFO		0.0000000	o. 0	0.00000000	0.0000000	0.03568000	u.860000cc8	
CCHE		0.00303080 0.30060336	J. 0 C G G G G G G	0.00000000	0.00500000		7 3.00000000	
CFOCK		0.00000000	0.00000000	0.0000000	3.01330.00	0.00000000	6.00000000	
EPH X		0.003.0000	0.00333033	0.00000000	0.0000000	0.00000000	0.0000000	
EPH Y		0.00000000	1.00003530	0.00000000	6.00300000	- 6.00006000 -	- 0.0C00CCC	
EPH Z		0.60000000	0.00000000	0.00000000	6.000.000	0.00000000	3.00000000	
EPH VX		0.00382000	0.00000000	0.00000000	6.60000000	G.G00000J0	0.00011000	
EFH VY		6.0000000	0.00000000	0.00000000	0.00000000		- G.00003128	
EPH VZ		0.70788998	J.06000000	0.00000000	C.00300000	0.00000000	0.00000000	
			0.000330.0					
PS 1 LON 1		6.01300000 6.01300033	0.00000000	0.00000000	0.03330033	0.00000000 0.0000000	3.36000360 3.36606963	
" Z-HT 1		5.00000335	- 0.00000000	-0.0000000	-0.00100000	T 0.00000000		·
PS 2		6.66603066	r.00(00C34	0.00000000	0.0000000	0.00000000	0.30330300	
LON 2		0.6000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	
Z-HT 2		0.0000000	-0.0000000	-0.0000000	0.00333600	0.0000000	0.5306353	
RS 3		b.003033C8	0.00200000	0.0033.000	0.0000000	U.2000000	3.00000000	
LON 3		C.06060366	0.3200.00	G.00000000	0.00100000	0.00400000	1.00000000	
Z-HT 3	ستعلق للمصور سرهاها العجاجا وعبكا أماوران	0.0000000		0.00000000	00000000_		0.00000310	

	STO DEV	ACCPRO EPH VX	CONE EFH VY	CLOCK EPH. VZ	EPH X	EPH Y	EPH 2	
ACCPFO	-22000COCE-01	1.36363366						
COVE	-3500000E-J1	0.3000.300	1.00000000				andre production and the second secon	
CLOCK	.350000C0E-31	0.00000000	0.00003000	1.00000010				
EPH X	.300010036+64	0.00000000	u.0000000	0.00003003	1.0000000			
ЕРН Ү	.3000000E+U4		-0.00000000	-0.00000000	0.00000000	-1.0000000	· · · · · · · · · · · · · · · · · · ·	
EPH Z	.300000 LDE+04	0.0000000	0.0000000	8.00680484	0.0000000	0.0000000	1.00000000	
EPH VX	.19000000E-J2		8.0c100cao-		-0.20000000	0.00000000	0.0000000	
		1.00000000						
EPH VY	-19030000E-32	0.00000000	0.0000000	0.30000010	0.0000000	0.00006060	0.00000000	
		0.00000000	1.0.300000					
EPH VZ	.1000000E-02	0.0000010	0.00000000	0.03000000	0.00000000	C.000000000	0.0000000	
		0.0000000	0.00000000	1.00006000				
		** ***		• • • • • • • • • • • • • • • • • • • •			· · · · · · · · · · · · · · · · · · ·	
PS 1		0.00000000	0.0000000	0.00000000	0.60100000	0.00000000	0.00000000	
		0.0000000		E.00000000			 1. <u></u>	
LON 1		6.30300000	0.000000000	0.00000000	0.00000000	0.00000000	0.0000000	
		4.31633333	0.00000030	0.00000000				
Z-HT 1		0.0000000	0.30003000	~ 3.50000000	_ 5.00000000			
		0.000:0000	0.03000300	6.0000-000				
RS 2		C.06400054	0.00000000	0.0000000	0.00000000	0.00000000	0.00000000	
		0.0000000	- 0.66036330-	- 6.06000000				
LCN 2		0.00003300	u.00000000	0.00000000	0.0000000	0.0000000	0.00863464	•
		0.00000000	0.0000000	0.0000000	0000000	0.0000000	0.00000000	
Z-HT 2		0.03000300	- G.00000000	- 0.3000000	- c.coooooo	010300000	- 0.00000000	
£ 111 £		0.03660000	0.00036300	0.00000000		0.000000	0.0000000	
ne 5			0.08598679	0.00000000	0.00343000		0.00000000	
PS 3		0.00000000		0.05000130	0.00303000	0.0000000	0.00000000	
100 7			0.000003333		0.0000.000	0.00000011	0.00005.00	
LON 3		0.0000000	0.00000000	6.00000000	0.0000.000	9.00000011	0.00000110	
-Z-HT 3	سان فروستاند وبندوند بارد د	0.03000000	. 0.00000000	- 00000000 - 0000000000	3.0000000	0.00000000		
2-77		0.0000000	0.0000000	8.3.000000	3.0000000	0.0000000	3.0000000	
HEA!	SUREMENT PARAMETERS		·					
		ومسواري والمراج والمويقا وح						
STANCARD DEVI	TATIONS AND COPRELATION	N COEFFICIENTS						
	STO DEV	RS 1	LCN 1	Z-HT 1	RS 2	LON 2	Z-HT 2	
		RS 3	LON 3	Z-HT 3				
PS 1	-15030000E-32	1.00000000	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		-			
LON 1	.57689712E-36	0.00001306	1.00000000					
Z-HT 1	.10036003E-v1	0.00000330	0.000000000	1.00030000				
05 2	.1505363CE-22	a.coocosos	-0.00000000 -		1.03300000_			
LCH 2	.517466984+06	0.03.50030	.91080[.]	6.00065000	0.00000000	1.00000000		
Z-HT 2	-13-5550E-31	0.00000000	6.00000000	0.00000000	5.06003600	2.000.50.0	1.00300000	
			~					
PS 3	.15000006-32	1.0000000	0.00000000	0.30503000	0.0000000	0.00000000	0.36003210	
LCH 2	.57646468E-C6	T.3000030	.90030030	0.0000000	0.0000000	.90000000		
LON C	************	0.0000000	1.00000000	3.444.404.4				
Z-HT 3	.13800C03E+61	0.03333330	0.0000000	0.30000000	6.00000000	. 0.00000000	0.00003600	
7-11 3		0.0000000	8.00000000	- "1.000G0G00"				
	建二字 动物有足术 海绵 化二十分异位	5.5350000		*******				

			JOB NO. Run date	08/30/74
SCH-CUIEN TR	AJECTORY TIME 566.5000 D	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	**********	******
	AJECTORY TINE 566.5000 D			
GCIDANCE				
		CONTOCL FURSE	PRIMARY	BOCY SUN
ULIAN CATE 244 AYS FROM LAUNCH- AYS FROM CUTCFF-	.4523.15478000 .566.50	CONTROL FHASE 6 FRESENT S/C MASS- 1494.88289798 POWER AVAILABLE 16.53524028	KG EPHENER	IS BCDY ENCKE
O RELATIVE STATES	3.50000000 X	Y	7	MAGNITUCE
UN PESITION	.14320C68295158E+39	.96710610715841E+08	.30214306629729E+08	.17542030141334E+09
VELOCITY	26741573660874E+02	.37014455328059E+01	12933623814313E+01	.29(155012924136+02
ARTH PCSITION VELCCITY	.76632549044037E+06 19299782577411E+02	.51811588743884F+08 245406110423545+62	1293362381431JE+01	.595827664136772+08 .31247335632346E+32
PCKE PCZITION	EJ+02073960J85E+07 .34394298681177E+01	5237571516.671E+07 , .26199926505304E+01	29589034520448E+07 -14534680441873L+u1	.05247504605956E+07 .45614261526117E+01
AC ACCELERATIONS		مستونستان و و و بر ادی و مستونستان		HAGNITUDE
RIMAPY BCOY	35216054555521E-u5	23776416193867E-05	74282224472570E-30	.43127285250342E-05
ERTURBING BOCIES HRUST	1668/350356417t-10 56394419340935E-07	1023104160'534c-09 6433225312.060E-06	56491223272148E-10 90769935048982E-07	.11:35496021500E-09 .65213754974835E-0E
ADIATION FRESSURE	0.	0.	0.	0.
FECTIVE S/C MASS ST/	ANDARD DEVIATIONS (KG)	grapi (n. 1906). Samusada (n. 1906). Anno 1906 - Samusada America (n. 1906). Samusada	The second secon	
Chtrol= .5958	KNUHLEUGE= 52.9512			
		1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980 - 1980		No and the same description of
ULTAN CATE 244	44523.65478000	LONTECL PHASE 6		BODY SLN
AYS FROM LAUNCH- AYS FROM CUTCEF-	567.00303000 2€.50100000	PRESENT S/C MASS- 1493.44517362 FOHER AVAILABLE 16.67711498		BODA EVCKE
A RELATIVE STATES			z	MAGNITUCE
UN POSITION VELOCITY	288966-J752137E+02	.96870275013787E+08 .362988419396732+01	13296283425169E+01	.17448425394548E+69 .29154u34695J18E+3Z
ARTH PESITION VELOCITY	65464338142395E+C5 19239939603951E+62	.53/50238386279E+08 24593819437732E+62	13296283225169E+01	.591345235275785+18
NCKE PESITION	58919821312990E+07 .342292306572C6E+C1	5125172462n792E+07 .2543523346/855E+01	28962294488790E+07 .14480813295247E+u1	.45263559372405E+81
C ACCELERATIONS	x	<u></u>		MAGNITUCE
FIFARY PCCY	+.35464671686194E+35	2420101764-247E-05	753426J5145977E-06	.435912522633+0E-05
_T				.121823132728526-09
ERTUREING BOCIES	17C83525365332E+10 -:53753040404846E+07	10512255121954E-09 4974257812979E-06	59146242940511E-U0 91886732135804E-07	.658366555816300-06

	2	-	5
1		T	Ţ
9	ٽ چ	Ë	?
3	9 8	\leq	
,	E	۲	
0		7	
E	AGE		
5	ä		
3			
1	Q.		

	7.30.00030 6.50100000	CONTRCL FHASE E PRESENT S/C MASS- 1443-42139371 FOMER AVAILABLE 21.3000000	KG EI	RIMARY BODY SUN PHEMERIS BODY ENCKE ARGET BODY ENCKL
S/C PELATIVE STATES SUN PCSITION VELOCITY	X .85359276259084E+C8 37310345962450E+C2	Y .9824165497u2906+u8 259992274815892+u1	Z .26258480626740=+1 34069595598151E+	
EARTH FCSITICN VELOCITY	31639687506246E+08 18231410837993E+62	.70521286902571£+07 26401752831425E+02	.26258480826740L+1	
ENCKE POSTTION VELOCITY	11641869300323E+E7 -20823536042919E+01	11084388569942E+07 20012306653047E+01	642495932u6823E+(
S/C ACCELERATIONS PFIHARY ECDY	x 48404963285670E±05	Y 5571U215812125E-U5	2	HAGNITUCE
PERTUREING ECCIES THRUST	.16059975559255E-G9 55115136581322c-u6	50006646228704E-10 263625137502656-06	14890482394648E-1 14435848225030E-1 16570613571341E-0	09 .22165610831511E-09 .
RADIATION PRESSUPE	THRUST= .658367E-06	AT TIME 567.0000	0.	
S/C MASS= .144342F+04	THRUST= .633028E-06	AT TIME 567.0000		
				Action to the control of the control
JULIAN CATF 244455 Days ffor Launch- 59 Days fach Cutoff-	0.15476000 3.50000000 .00149000	CONTROL PHASE 9 FRESENT S/C MASS- 1443-42139371 POWER AVAILABLE- 21.0000000	KG EF	RIMARY BODY SUN PHEMERIS BCCY ENCKE ARGEI BODY ENCKE
/C RELATIVE STATES SUN POSITION VELOCITY	.63788094552524E+08 39847194934075E+02	.95572648950013E+08 67163684880397E+01	Z .24087262868869E+i	
EARTH PESITION VELOCITY	42137162427563L+08 18519887852660E+02	81485781646185E+C7 27491846716592E+C2	.24087262868869F+0 43706737542881E+0	
FUNCKE POSITION	74CA8842535019E+04 -26482411951477E+61	21667795476913E+64 -19519505853896E+01	772796585679056+0 114023159851486+0	
S/C ACCELERATIONS PRIMARY BCCV	X 52314740855675E-05"	78382312592807E-U5	Z 19754766540795E-0	MAGNITUDE 05 -962853563314696-05
PERTUREING BOCIES IMPUST RADIATION FRESSURE	.12951377523410E-09 0.	.14737641084744E-10	8153376057/229L-1	10 .153749J4927835E-G9
	TY MATRIX (CUTGEF HRT C		Ŭ•	
788571996278E+36 165927437297E+66 202638116143E+86	.1266565280JAE+06 867420516111E+06 -55207286853CE+05	9522957£5997£+05 0. .118593248094£+05 0.	•	
946565884279E+C3 281665221582E+G0 2539760913-1E+30	.203132601988E+00 906940344607E+00 .7960423230792-01	111410552547E+005511513658 .108740739237E+012636251375 .412889027565E+001657061357	03E-06	
KNOHLEDGE CÔVAPIANCE EASEC ON MEASUPEMENT	AT HANEUVER EXECUTION IS UP TO 566.5800 C			
FSS POSITIO	JN = .20746733E+03 KI			and he will be a similar of the same

١		٥
C	j	ō

and the same of th

STA		**************************************		and the second of the second o				
TANCARE GEV	TATIONS AND CORRELATI	CN COEFFICIENTS						
	STC DEV +	×	V	7	vx.	VY	٧Z	~ .
X	.48925157c+02	1.000,0030						•
Y	.10291952E+03	83443212	1.00000600					•
7	.173368322+33	. 83458317	95599587	1.00000000				•
V.X	.50692367E-33	.7165.686	58757729	.58753891	1.00300400			
VY	.61577030E-13	65721765	.76225247	76218586	85707312	1.00000000		
vz	.10015685E-12	.64758525	74525175	.74018973	.86317727	99929273	1.0000000	
						en and an and an and an and an and an an and an		
ACCPFC		.49353771	38250367	.38262769	.84114825	72799167	.74212475	
CONE		49642126	.33328819	33520734	88132628	. 5957616	67184413	
CLCCK -		43926803	. 27350985	2735 8211	78732471	.61503079	63183912	
EPH X		.00335658	001>8728	.00154917	00082434	.00181281	03189074	
EPH Y		u2397325	.02407533	02408043	00405731	. 00335509	00241332	
EPH Z		.05465395	05942885		.01124137	01040385	.03500865	
EPH VX		00108694	£262658U5	+.00265695	00243320	.00397431	00394868	
EFH VY		00479673	.00u29c11	00624585	00324583	-00534428	005207c3	
EPH VZ		.01037155	01615628	01615355	701963301	01749130	01721461	
WS 1		.20521900	00737462	00750761	01699597	00372125	.00198274	
LON 1		.07150912	04529250	04510438	01004063	00757529	.01358020	
Z-HT 1		14982835	.35082685	35087849	02184661	00502296	.02565211	
FS 2-			03249132	D3252367	-00104086	.00514338	-: 00549267	· · · · · · · · · · · · · · · · · · ·
LON 2		02532737	.ŭ3221255	03211517	. 01235731	00777578	.u1137876	
Z-hT 2		34296209	34664919	.34676978	. 4:104865	1287751	028665c3	
PS 3	معطم فللمستوالي والمحاري والمتناث والمستوالين والمستوالين	03066300_			0.0000000			· · ·
LON 3		.04587001	.03671292	03660611	.01089248	86727156	. 61182271	
Z-HT 3		0.00000000	0.00000000	0.00000000	6.00000000	0.00000000	0.03000000	

SCLVE-FOR PARAMETERS

ORIGINAL PAGE IS OF POOR QUALITY

	STO DEV	ACCPRO EPH VX	CONE . EFH VY	CLOCK EPH VZ	EPH X	EPH Y	EPH Z	•
ACCPEO	.54492507E-02	1.30000030						•
CONE	.13518733E-71	91387515	1.00000000					
CLOCK	-175-7195E-01	98704162	.90285097	1.000000000				• • • • • • • • • • • • • • • • • • • •
EPH X	.217213196+74	36342609	.00127E35	. 8000 2916	1.30300.00	. *		
EPH Y	-19666U17E+U4	+.00222374	.00212760	.00203888	.93767799	. 1.00000000		
- EPH 2	•11519611E+04	.00>58232	00522117	00471068	.90317333	.81665764	1.00000000	
EPH VX	.98778338E-03	30211928	.00180037	.00140582	.15013636	.07494941	.06979347	
EPH VY	.99076961E-03	00052069 .02341483	.00017040 1.00030000	00051647	•06090519	.14403249	.05453313	
EPH VZ	.98144045E+03	.00519497 .02399236	003928u1 60394547	00191077 T	.02896769	02752334	.16761368	
RS 1		.00170995 0023506	.0C042472 .CCJ1>510	.00143c24	.00263002	00303845	Du161779	
"LGN 1 "		.00266921 00004810	0^200210 0000075.	00246091	.00069757		00886034	<u> </u>
Z-HT 1	***	00221248	.00467981	.007901>5	60345338	.02175388	05122977	
PS 2		30073460 00096018 .00011482	.00086910" .00.27767 00006533	000319450008421600014035	.00080114	00205753	.00481145	
LCH 2	-	.00190069	03237512	0024-653	00010849	. 00193791	00613814	
Z-HT Z		CC773520 .00075648	.00527352 00065635	00182941	.00344813	02172954	.05120941	
RS 3		0.0000000	0.00000000	0.00000000	0.00000000	0.60003000	0.00000558	
FUN 3	magazina da ang	03001265	00235953 00235953	00232553 -30614770	.00J38182	.00189038	00710454	
Z-HT 3	والمراجع	0.0000000	0.00.00000	1.00000000	0.0000000	0.0000000	0.00000000	·

	STD DFV			7 (1 - 1) (1 - 1) 2 (1 - 1) 7 (1 - 1) (1 - 1)	٧x	14 V.Y 15 pr. – 14 pr. – 15	, VZ	
k	.21725186L+04	1.00000400		The state of the state of				
Y	-19659017E+14	.93657483	1.00000630					
z	.1154699JE+24"	.65923450	. #133u443	T.00000000				***
• •×	-11113616L-J2	.14117582	.05386266	.09736148	1.00000000			
VY	.116373392-02	. 34314266	.14231026	30793878	18974760	1.00000000		
vz -		.03215163	00700270	.19065394	.29782450	-:37360029	1.00000000	
POSTYIC	N SOB-FCOCK							· · · · · · · · · · · · · · · · · · ·
E-VALS	(SCRT)	EIGENVECTORS	e e e e e e e e e e e e e e e e e e e	4 <u>. 14 (14 (14 (14 (14 (14 (14 (14 (14 (14 </u>				
	.362588E+C4		23945 .345277 60137 .642148					
	.389361E+03 .623553E+03		60137 .642148 84684 .684419					
	*6593395		01001 .00441	***				2.1
E-VALS	(SCFT)	EIGENVECTORS	ريان ويون ويون ويون ويون ويون ويون ويون و					
	.102114E-02		71059 046632					
	.577595E-03	41985466 .669 -37455712486	94536 .612266		• •			
CONTRO		NEUVER EXECUTION TI						
- Goririt				, 5717	· · · · · · · · · · · · · · · · · · ·			
	RSS POSITION = RSS VELOCITY =							•
						•		
								- A 25
	والدالسان فداك فترقد سياسا سيبيد وسيرد	A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			ن ن حدد د د د د د د د د د د د د د د د د			
STA	TE PARAMET	ERS		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				NA PA
S14	TE PARAMET	ERS						Par in
		ERS						ORIGINA OF POOR
		LATION COEFFICIENTS			- vx	94	VZ	ORIGINAL OF POOR (
	TATIONS AND COORE	LATION COEFFICIENTS			- vx	7	VZ	DRIGINALI PA
	IATIONS AND COPRE	LATTON COEFFICIENTS X 1.00100000	**************************************		- VX	7	VZ	DRIGINALI PAO DE POOR QUA
INCAPE DEV	INTIONS AND COPRE	LATTON COEFFICIENTS X 1.0000C366 .00388754	1.00000000		- VX	¥	¥2	DRIGINAL PAGI
NCAPC GEV	.10176126E+U5 .10164129E+.5 .10164129E+.5	1.00300006 .00388754	1.00000cco .00090243	1.0000000		QY.	• • • • • • • • • • • • • • • • • • •	DRIGINALI PAGE DE, POOR, QUALLI
NCAPC GEV	.10176126E+U5 .101641292+.5 .1016412925+.5 .59693829E-52	1.0000000 1.00000000 .00000000 .000000000 .00133360 .18520546	1.00000cc0 .00090343 .01854794	1.:0000000 ::0726983	1.0000000		VZ	DRIGINALI PAGE I DE POOR QUALITY
HCAPC GEV	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.0010C06C .00348754 .0132366 .18523646	1.00000000 .00090343 .01854754 .17423578	1.10000000 ::0726983 .10038405	1.0000000	1.00003000		DRIGINALI PAGE IS DE POOR QUALITY
NCAPC GEV	.10176126E+U5 .101641292+.5 .1016412925+.5 .59693829E-52	1.0000000 1.00000000 .00000000 .000000000 .00133360 .18520546	1.00000cc0 .00090343 .01854794	1.:0000000 ::0726983	1.0000000	1.000CJ000 .038569C8	1.00000000	DRIGINAL PAGE IS DE POOR QUALITY
HCAPC GEV	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.0010C06C .00348754 .0132366 .18523646	1.00000000 .00090343 .01854754 .17423578	1.10000000 ::0726983 .10038405	1.0000000			DRIGINAL PAGE IS DE POOR QUALITY
ACCPEC	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.0000000 1.00000000 1.00000000 1.000000000 1.000000000 1.0000000000	1.00003630 .0090343 .01854754 .17423578 .00357848	1.10000000 .10726983 .10038405 .15524761	1.0000000			PAGE IS QUALITY
ARCAPE GEV	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.00300000 .00348754 .003183360 .16520546 .02131342 .00816420	1.00000c20 .00090343 .018547-4 .17423578 .00357848	1.10000000 .10726983 .10038405 .15524761	1.0000000 00274.82 .01513980 03366138 52362701	.03856908	1.00000000 04893756 00038707	DRIGINAL PAGE IS DE POOR QUALITY
ACCPEC CONE	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.0000000 1.0000000 .00348754 .01133360 .18520546 .02131342 .00816420	1.000000c20 .00090343 .01854794 .17423578 .00357848	1.0000000 .:0726983 .0038405 .155247d1 00455641 00460667	1.0000000 0274.82 .01513980 03366138 52362701	33725808 06251509 65261599	1.00000000 04893756 06038707 42698147	PAGE IS QUALITY
ACCPEC CORE CLOCK	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.0010000 1.0010000 .00388754 .0133360 .18520546 .22131342 .00816420	1.00000000 .0000000343 .01854794 .17423578 .00257848	1.10000000 .10726983 .10038405 .15524761	1.0000000 00274.82 .01513980 03366138 52362701	33725808 06251509	1.00000000 04893756 00036767 42698147 0003000	PAGE IS QUALITY
ACCPEC CONE CLOCK EPH Y EPF Y	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.0000000 1.00000000	1.00000c20 .0090343 .01854794 .17423578 .00357848 03257848 00399089 .005039089 .00503000	1.0000000 .:0726983 .0038405 .155247d1 00455641 00460667	1.0000000 0274.82 .01513980 03366138 52362701	33725808 06251509 65261599	1.00000000 04893756 06038707 42698147	PAGE IS QUALITY
AGCPRC CORE CLOCK EPH Y EPH Z	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.0010000 1.0010000 .00388754 .0133360 .18520546 .22131342 .00816420	1.00000000 .0000000343 .01854794 .17423578 .00257848	1.10000000 .:0726983 .:0038405 .15524701 60455641 60560667 73992697 0000000	1.0000000 00274.82 .01513980 03366138 52362701 .04948112 00703000	33725808 33725808 06251509 05261599	1.00000000 04893756 00036767 42698147 0003000	PAGE IS QUALITY
ACCPEC CGNE CGNE CGNE EPH Y EPH Y EPH Y EPH VX	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.00300000 .00348754 .00348754 .003526546 .02333340 .00816420 00353684 05182933 .00496854 000000000000000000000000000000000000	1.00003C20 .0C0993243 .01854794 .17423578 .0C257848 03254254 .30639089 .00503213 0CC00000 0CC0CC00	1.10000000 .:0726983 .:0038405 .15524761 	1.0000000 00274.82 .01513980 03366138 52362701 .04948112 0490100 001000000	33725808 33725808 06251509 05261599 00000000	1.00000000 04893756 00036707 42698147 0003000 0033000 0033000	PAGE IS QUALITY
ACCPEC CGNE CLOCK EPH Y EPH Y EPH Y EPH Y EPH YY	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.00000000	1.00003C20 .0C090343 .01854754 .17423578 .0C357848 03254264 .30639089 .00503213 0CC00C00 3CC.3C000 0CC0CC00	1.10000000 .10726983 .10038405 .15524741 00560667 03992097 0000000 00000000 00000000	1.0000000 00274-82 .01513980 03366138 52362701 .04943112 0090300 0090300 0090300 0000000	33725808 33725808 .06251509 .05261599 uv101030 0000000 00000000	1.00000000 04893756 0038767 42698147 00330033 .00500003 0033003 00000000	PAGE IS QUALITY
ACCPEC CGNE CGNE CGNE EPH Y EPH Y EPH Y EPH VX	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.00300000 .00348754 .00348754 .003526546 .02333340 .00816420 00353684 05182933 .00496854 000000000000000000000000000000000000	1.00003C20 .0C0993243 .01854794 .17423578 .0C257848 03254254 .30639089 .00503213 0CC00000 0CC0CC00	1.1000000 .0726983 .0038405 .155247d1 03560667 03992097 0000000 00.03003 .00.0300 00.0300	1.0000000 0274.82 .01513980 03366138 52362701 .04948112 00103000 03300000	33725808 33725808 06251509 5261599 0000000 0000000	1.00000000 04893756 00036707 42698147 0003000 0033000 0033000	PAGE IS QUALITY
ACCPEC CGNE CLOCK EPH X EPH Y EPH Y EPH Y EPH YY EPH YY EPH YY	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.0030C30G .00308754 .00308754 .0133336 .18520546 .0213.342 .00816420 05182933 .00450856 05050000 00000000 000000000	1.00003630 .00090343 .01854794 .17423578 .00357848 03257848 0539089 .00501213 0000000 00000000 000000000 00000000	1.10000000 .:0726983 .:0038405 .155247610045564100560667039269700000000000000000000000	1.0000000 00274.82 .01513980 03366138 52362701 .04948112 00703000 00000000 00000000 00000000	33725808 33725808 025251509 0000000 00000000 00000000 00000000	1.00000000 04893756 0036767 42698147 0030000 0030000 0000000 0000000 0000000	PAGE IS QUALITY
ACCPEC CORE CLOCK EPH Y EPH Z EPH Y EPH Z EPH VZ EPH VZ	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.003000000	1.00000c20 .0090343 .01854794 .17423578 .00357848 0357848 05039089 .00503213 0000000 00000000 00000000 00000000	1.10000000 .10726983 .10038405 .15524761 00560667 03992097 0000000 00000000 00000000	1.0000000 00274-82 .01513980 03366138 52362701 .4948112 0090300 0090300 0090300 0000000 0000000 0000000	33725808 33725808 06251509 5261599 0000000 00000000 00000000 00000000	1.00000000 04893756 06038707 4269347 0000000 00000000 00000000 00000000	PAGE IS QUALITY
ACCPEC CGRE CLOCK EPH Y EPH Z EPH YZ EPH YZ EPH YZ LPH YZ LON 1	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.000000000000000000000000000000000000	1.00000c20 .00090343 .018547-4 .17423578 .00357848 0357848 05039089 .00503213 0000000 0000000 0000000 0000000	1.0000000 .0726983 .0038405 .15524741 00560667039269700000000000000000000000	1.0000000 0274.82 .01513980 03366138 52362701 .04948112 00703000 007030000 007030000 00700000	337258083372580806251509526159900000000000000000000000000000000	2.00000000 04893756 0038707 42698147 0003000 0000000 0000000 0000000 0000000	PAGE IS QUALITY
ACCPEC CORE CLOCK EPH X EPH Y EPH Y EPH Y EPH Y EPH YZ EPH WX EPH	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.00300306 .00348754 .00348754 .0133336 .18520546 .0213.1342 .00816420 05182933 .0045854 05182933 .0045854 003000000 0030000000000000000000000000000000000	1.00003G30 .00090343 .01854794 .17423578 .00257848 03254264 .30639089 .00503213 0000000 3003G30 00000000 00003G30 000000000	1.1000000 .0726983 .0038405 .15524761 03560667 03992697 0000000 0000000 0000000	1.0000000000274.82 .015139800336613852362701 .04948112001000000000000000000000000000000 0.00000000	33725808 33725808 06251509 0000000 00000000 00000000 00000000	1.00000000 04893756 00036707 42698147 0003000 0030000 0000000 0000000 0.0000000	PAGE IS QUALITY
ACCPEC CGNE CLOCK EPH Y EPH Y EPH YY EPH YY EPH YY EPH YY EPH YY EPH YZ	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.00300366 .003487546 .003487546 .021313342 .02131342 .00816420 05182933 .00476854 05182933 .00476854 0030000000000000000000000000000000000	1.00003C20 .0C090343 .01854754 .17423578 .0C357848 03257848 05039089 .00503213 0CC00C00 0CC0C00 0CC0C00 0CC0C00 0CC0C00 0CC0C00 0CC0C00 0CC0C00 0CC0C00 0CC0C00	1.10000000 .:0726983 .:0038405 .155247810356066703992697000000000000000 0.00000000	1.0000000 00274.82 .01513980 03366138 52362701 0070300 00703000 0000000 0000000 0000000 0.0000000 0.0000000 0.0000000	33725808 33725808 0251509 5261599 0000000 00000000 0000000 00000000 0.00000000 0.00000000	1.00000000 04893756 0036767 0036767 0030603 0050503 0050503 0000000 0.0000000	PAGE IS QUALITY
AGCPFC CORE CLOCK EPH Y EPH Z EPH YZ	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.00300000 .00348754 .00348754 .00348754 .003526546 .02313342 .00816420 005182933 .00496854 00300000 0030000000000000000000000000000000000	1.00003c20 .0090343 .018547-4 .17423578 .00357848 03257848 03257848 00503203 00503203 00003c30 00003c30 00003c30 00003c30 00003c30 00003c30 0.00000000	1.0000000 .0726983 .0038405 .15524741 00455661039606670396000000000000000000000000000000000000	1.0000000 0274.82 .01513980 03366138 52362701 .04948112 00100000 00100000 00000000 0000000 0.000000000 0.00000000 0.00000000	33725828- .06251509 .05251509 .05261599 00000000 00000000 00000000 00000000	1.00000000 04893756 0038707 4269347 0033503 0035003 00000000 0.000000000 0.000000000 0.00000000	PAGE IS QUALITY
ACCPFC CGNE CLOCK EPH Y EPH Z EPH YZ EPH YZ LON 1 Z-HJ 1 RS 2 LCN Z Z-HJ 2	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.00000000 .00348754 .00348754 .0133336 .18520546 .02131342 .00816420 05182933 .0149684 00360000 00000000000000000000000000000000	1.00000c20 .00090343 .01854794 .17423578 .00357848 03254264 .006399089 .00503213000000000000000000000000000000000	1.000000 .0726983 .0038405 .155247d1 03560667 03992697 0000000 0000000 0000000 0000000 0.0000000	1.000000000274.82025139800336613852362701049481120070300000000000000000000000000000 0.00000000	337258083372580802515090200000000000000000000000000000	1.00000000 04893756 0036707 42698147 0003000 0000000 0000000 0000000 0.0000000 0.0000000 0.0000000 0.0000000 0.00000000	PAGE IS QUALITY
AGCPFC CORE CLOCK EPH Y EPH Z EPH YZ	.10176126E+U5 .10176126E+U5 .10164129E+J5 .10164129E+J5 .59623829E-J5 .57527098E-J2	1.00300000 .00348754 .00348754 .00348754 .003526546 .02313342 .00816420 005182933 .00496854 00300000 0030000000000000000000000000000000000	1.00003c20 .0090343 .018547-4 .17423578 .00357848 03257848 03257848 00503203 00503203 00003c30 00003c30 00003c30 00003c30 00003c30 00003c30 0.00000000	1.0000000 .0726983 .0038405 .15524741 00455661039606670396000000000000000000000000000000000000	1.0000000 0274.82 .01513980 03366138 52362701 .04948112 00100000 00100000 00000000 0000000 0.000000000 0.00000000 0.00000000	33725828- .06251509 .05251509 .05261599 0000000 00000000 00000000 00000000	1.00000000 04893756 0038707 4269347 0033503 0035003 00000000 0.000000000 0.000000000 0.00000000	PAGE IS QUALITY

STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS

	210 DEA.	ACCPRO EPH VX	CONE EFH VY	EPH VZ	ЕРН Х	ЕРН У	EFH Z	•
ACCPEC	.22376033E-31	1.00000000	يسيد به ال					·
CONE	.350.000GE-31	6.0000000	1.00000000					
CLOCK	.350330Cuc-91	0.60006030	C.0CG01430	1.00000000				
EPH X	.3J234955E+14	0.000003.0	~~ 0.0ccaaaaa ~~	- C.OGOCOOO	1.05300030	 		
EPH Y	.30193969E+04	0.00000000	0.00000000	0.00000000	.00311871	1.00000000		
EPH Z	.30166438E+44	0.00000000	0.00000000	0.0000000	.0J103348	.00067847	1.00000000	
EPH VX	-10019-73E-92	9.0000000 1.00000000	0.00330604	0.00000000	,13556119	2820338	.00929324	•
EPH VY	-10003619E-02	0.00000000	o . o a é a a a a a		.32821301	11215739	.00618555	
		.G.392470	1.00330000				00000000	
EPH VZ	.99912232E-03	0.0000000	0.00034603	0.00000000	.01929853	.00618736	. 19561429	
	والمستنب والم والمستنب والمستنب والمستنب والمستنب والمستنب والمستنب والمستن	.00126764	.00086627	1.00000000				
		0.0000000	0.00000000	0.03203330	0.00000000	6.60000036	. 9.90003008	
		0.444663668	0.00000000	0.016.1006				
LON 1		0.44300000	4.00000000	0.00000000	0.00000000	G. 00000000	0.0000000	
· ···	Andreas are and the second second beautiful to	0.03500000	0.03030.00	0.00000000	erent in the second			
Z-HT 1		4.00300000	0.0000.000	0.00000000	0.000000000	0.00000010	3.00003030	
		3.0000000	0.00000000	0.00363600				
PS 2	- Charles and the second secon	0.0000000		─~v.sozoduzo ~~		0.00003333	0.0000000	
		0.0000000	0.60000000	0.00000000				
LON 2		L.00000000	0.0000000	0.00.0000	0.00000000	0.0000.001	0.08.000.0	*
	lagrafia (anti-anti-anti-anti-anti-anti-anti-anti-	0.03000330		c.occooco-				
Z-HT Z		0.00000000	0.00031000	0.00000000	0.60000000	6.00000000	J.000C0J00	
		0.00003333	0.00000000	0.00000000				
8S 3		G.CCJ00Jug	0.100016.0	0.00300000	C.000000CG0		0.0000000	
		3.006.3003	0.03050530	0.00000110				
LON 3		0.=63600360	5.00.00000	4.00.00000	1.00038080	0.00000000	J.00000044	
		5.500.0000						
Z-HT 3		0.60330930	0.00000000	0.00000000	0.30303000	0.00000000	3.00000000	
		0.00000000	0.0344.000	0.3.000000				

S/C UNCERTAINTY RELATIVE TO EPHENERIS BODY

```
STANDARD DEVIATIONS AND CORRELATION COEFFICIENTS
                STO DEV
                                                                                                                                                            DRIGINAL DE POOR Q
                 -10615795E+05 1.00000000
                 .13603126c+05
                                            .00382518
                                                           1.000000000
                  -11561057E+u5
                                            .30130941
                                                             .00088516
                                                                            1.00000000
                                       .18148805 .01887236 .00731296 1.00000000
                 .53937154E-12---
                 .58390302E-J2
                                                                                           -.00254592 1.00000000
.01470016 .00835481 1.00000000
                                            .02149578
                                                             .17002430
                                                                            . (0633676
                                                                            .15128016
                                            .00817122
                                                             .00368799
                                                                                                                                                          PAGE IS
     POSITION SUB-BLOCK
     E-VALS (SCRT)
                            EIGENVECTORS
             .1C5882E+C5
                                 -.5859247U .80945869 -.03832661
-.15328328 -.06426461 .98609041
               .105797E+05
     E-VALS (SCRT)
                                 EIGENVECTORS
               .559887E-02 .99256136 -.02962352 .11808639
                                    ..1479304 .99210416 .12454116
               .584189E-62
                                    -- 12084335 -- 12186789 -- 93516248
    TARGET WET BURN START STATE
       .1E6897713214E+01 .145576056845E+00 .392573933375E-01 .233362973725E+07 .144252631347E+00 .1024321047662+31 .415050403810±-01 .130424388194E+06 .423921540814E-31 .406053380134E-01 .903973457793E+00 .366492369323E+05
                                                                                                           -1310662340742476
                                                                                                                                     -34975269324CE+25
                                                                                                           .232535214707E+07
                                                                                                                                     .383763066629E+05
                                                                                                                                     .220491618387E+07
    TARGET HET CONTRL
     -.132527664658F+07 .226463559622E+06 -.156679460346E+06 -.316451491957E+00 -.339816266537E+06 -.135556516362E+07 .185671253656E+05 -.150173454620E+00 -.347652940952E+06 .591893753653E+05 .592781036278E+06 -.934161635121E-01
    CONTROL MEIGHTS
       ACCEPC .1000E+01
          CUTCFF
    TAPGET HEIGHTS
                X .1.30E+01
              - V - .1010E+C1
     UNWEIGHTEE GUIDANCE HATRIX (CCNTROLS WET TARGETS)
       .642633145124E-36 .110399695622E-36 .157126700147E-06
-16365C121914E-36 .712789424044E-06 -.681392175036E-07
-427386E29068E-36 -.429277146513E-07 -.157237563469E-05
.139865514866E-00 .629628561760L-01 .697998783173E-01
```

MACCISTRAINED CONTPOL JCP (ECTIONS STANDARD DEVIATIONS AND COPRELATION COEFFICIENTS ACCERO CONE CLOCK CUTOFF 1.00300040 ACCPFC .13675563E-01 .08236106 1.00000000 CCNE .130+69152-J1 CLUCK .27214157E-u1 . 02083097 1.00000000 -.01146795 .96746350 CUTOFF .350659546+34 .26569853 -.14732920 1.00000000 ACCPRC, SIGNA= .13676E-01, MAX ALLOWEC= .50000E+00 CCVE, SIGHA= .13047E-31, MAX ALLOWEC= .87266E+50 CLCCK, SIGMA= .272145-C1, MAX ALLOWED= .872662+80 CLTOFF. SIGNA= .15366E+G4, HAX ALLOWED= .43200E+67 RESIC TARGET ERROP STANDARD DEVIATIONS AND GOTRELATION COEFFICIENTS STC DEV .31045846E-J9 1.00300300 .29551625E-79 .10385197 1.00000000 OF POOR QUALITY .87221179 .01988777 1.606006.0 .231991116-.3 UNDETCHTED GUIDANGE MATRIX (CONTROLS WAT TARGETS) .111 399695622E-06 .157186700147E-06 *6426321451241-16 +.168865121914E-J6 .732789424544E-06 -.681392175036E-07 -.429277148513E-J7 -.157237563465E-05 -42717652 JG59F-36 .139865514626F+00 .62962656176GE-01 .697898783173E-01 FINAL CONTROL COPALCTIONS INCLUDING CONSTRAINTS STANGARE DEVIATIONS AND CORRELATION COEFFICIENTS STO DEV ACCPRO CONE CLOCK CUTOFF - .13675531-31 1.000000000 CONE .13646915E-01 .0236136 1.0500000 - 02503657 - .1146795 .96746350 .26569853 .2/2141576-01 CLOCA .35.659542+.4 -.14732926 1.00000000 CUTCEF CONTROL STANDARD SEVENTIONS AND MAXIMUM VALUES 1.36755 " 55.JO PER CENT" 50.00 DEGPEES CLCCK 1.55926 SC.00 DLGREES CLICEF .04059 53.30 DAYS

"GAPHA PATRIX

.7 C3545127804E-06 .212934469417E-06 .171902374265E-06 .3834,39214366-66 -.447813781417E-07 -.146839280533E-US .933670228c0/E+00 -.102837408013E+03 -. 345366c15399£+01 ·161554556933E+30 .876515997890E-01 .33716432297JE+06 .16736130997oE+06 -161211101212E+06

STATE EFRCE AFTER BURN

GCATRCL COVARIANCE AT MANEUVER EXECUTION TIME - 567.0000 DAYS

	STO DEV	×	Y	Z	VX	VY	٧Z	1,0
		a to a second					· ······	
×	.48925167E+62	1.00000030						•
y	-102919528633	83443202	T. 00 C00 000					
7	-17336838E+J3	. 03450317	95599587	1.000000000				
VX	-50692387E-13	.71650646	58757729	.58753891	1.0000.000			
	.615770332-03	65721765	.7E225247	76218586	85707312	1.00033030		
٧Z	•10C15685E-J2	.64758525	74025175	.74018973	.86317727	99929273	1.00000020	
TARGET FR	RCR BEFORE BUPN						· · · · · · · · · · · · · · · · · · ·	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
								•
DARD DEVI	ATIONS AND CORRELATI	ON COEFFICIENTS		part of the same	make the state of the state of	and the second s	The second secon	
	STO DEV		<u> </u>					
	7.0 047			·				
×	.19675628E+J5	1.60000010						
×	.19675628E+J5	1.0000001C	1.00000000		<u> </u>			······································
Y Y Z			1.00000000 .06723815	1.00000000	, <u> </u>			
Z Z	-18909759E+35	.19516873		1.00000000				
Z Z	.18909759E+35 .16833437E+35	.19516873		1.00000000				
Z YARGET ER	.18909759E+35 .16833437E+35	.195168#3 .07080052		1.00000000				
Z YARGET ER	.18909759E+35 .16833437E+35	.195168#3 .07080052		1.00000000				
Z YARGET ER	.18909759E+J5 .16833437E+J5 RCR AFTER BURN ATIONS AND CORRELATI	.195168#3 .07080052	. 46723815					
Z YARGET ER	.18909759E+35 .16833437E+35	.195168#3 .07080052		1.000090G0 Z				
Z YARGET ER	.18909759E+J5 .16833437E+J5 RCR AFTER BURN ATIONS AND CORRELATI	.195168#3 .07080052	. 46723815					
Z YARGET ER	.18909759E+J5 .16833437E+J5 RCR AFTER BURN ATIONS AND CORRELATI STO DEV .1177363EE+U4 .14091596E+64	.195168#3 .07080052 TON COEFFICIENTS X 1.00000000 82722541	. 46723815					
Z YARGEY ER DAPC DEVI	.18909759E+J5 .16833437E+J5 RCR AFTER BURN ATIONS AND CORRELATI STO DEV .11773636E+U4	.195168#3 .07080052 TON COEFFICIENTS X	.06723815					
Z YARGEY ER DAPC DEVI	.18909759E+J5 .16833437E+J5 RCR AFTER BURN ATIONS AND CORRELATI STO DEV .1177363EE+U4 .14091596E+64	.195168#3 .07080052 TON COEFFICIENTS X 1.00000000 82722541	. 06723815	2				
Z YARGEY ER DAPC DEVI	.18909759E+J5 .16833437E+J5 RCR AFTER BURN ATIONS AND CORRELATI STO DEV .1177363EE+U4 .14091596E+64	.195168#3 .07080052 TON COEFFICIENTS X 1.00000000 82722541	. 06723815	2				

				OR NO. UN DATE8/30/74
	**************		********	***************************************
SCHECULED TRAJEC	TORY TIME 567.0000 0	AYS		
STH FILE TRAJEC	TORY TIPE 567.000 0	AYS		
THRUST				
				•
			•	
JULIAN DATE 2444523	1-6547 <i>F</i> 000	CONTROL PHASE 6		PRIMARY BODY SUN
DAYS FECH LAUNCH- 567	.00366346	FRESENT S/C PASS- 1493.4	4517362 KG	PHENERIS BODY ENCKE
DAYS FECH CUTCEF-	. 00005000	FOHER AVAILABLE 16.6	7711498 KH	TARGET BODY ENCKE
SIC PELATIVE STATES	x	Y	Z	MAGNITUDE
SUN POSITION VELOCITY	.14195578119640E+09	.96870273018550E+0		
AECO 114	264966107638896+62	.36298841875293E+0	113296283251794	01 .291540307.5556E+02
EARTH POSITION	654643E029U527E+C5	.50750238533478E+u		
AEFCCIAA	19209919644874E+C2	24593819453643E+0	21329628325179464	·01 .31235326922592£+G2
ENCKE POSITION	585198227331996+07	51251724557176E+D		
VELOCITY	.342292303/3464F+01	E5835233288844E+0	1 •1448U813231459E	452635995352896+01
S/C ACCELERATIONS	×	The control of the second of t	 	NAGNITUCE
PRIMARY BCDY PERTUREING BCDIES	35464671678281E-C5 17083525327899E-10	24201617634615z-0		
THRUST	55753040446822E-07	10512255084064E-0 649702978D4152E-U		
RADIATION FRESSURE	0.	0.	0.	0.
EFFECTIVE S/C MASS STANDAR CONTROL= .6457 KNG	U DEVIATIONS (KG)			The state of the s
KNUBLEEGE LKGEFTAINTIE		. 7 0000 DANG	· · · · · · · · · · · · · · · · · · ·	The state of the s
KNOWLEEGE CHOCKINITIES	SALEVENI ITHE SC	7.0000 DAYS		
Company of the second of the s	and the second section of the second		The second secon	
POSITION SUB-BLOCK				7 6
S-18 S SPECTS	ETCENIZECTORE	**************************************		88
E-VALS (SCRT)	EIGENVECTORS			TRICINAL POOR O
•193584E+G2		18370 17810758		8
• 690267E-02 • 136227E+03	00118391 .8590 .207868354990	57347 .51884257 57241 .84142174		S P
میکنید و به	and the state of t			- RE
E-VALS (SCPT)	EIGENVECTORS			QUALITY OF THE PAGE
		54630 302614E3	بالمراجع والمستوارية والمراجع والمراع والمراجع والمراع والمراع والمراجع وال	
.159051E-04 .764922E-03	02c54203 .8486 .371749284826	•7505 •52856940 •5590 •79311964		₹ 55

STATE	PARAMETERS							OR PO
TANDARD DEVIATION	S AND COPRELATI	ON COFFFICIENTS	· · · · · · · · · · · · · · · · · · ·		***************************************			78
		0.0 00277 2012770						POOR.
	TO DEV	x · · · · ·			VX		vz	7
								SE
								.20
	065C2CE+JZ	1.33900330C						10,10
	10734256+02	81394355	1.00759850					G.D.
	452141E+J3	.81417594	9555551	1.00000000				A COR
	759237E-03	.37673228	33903035	33907790	1.00303000	1.30638638		
	6/7274E-33	25597493	.45784281	45776822	851437C7 .85895893	+.598645u3	1.06000000	
vz .60	1648265E-J3	.27516471	41478874	.41472052	* 92032033		1.0000000	PAGE
ACCPEC		.19260718	14756884	.14763823	. 86381476	65859657	.68107051	
CONE		17218760	.12583559	12587485	62909630	.620/7170	63308823	
CLUCK		18273599	. 49179895	09186573	62873668	.57258896	58091145	•
EPH X		.00564825	00383537 "	.00383724	0562317	.00176580 -		
EPH Y		+.02035399	.02911683	02912060	00397792	06132226	.00279468	
EPH Z		. 06243197	06953678	.06954218	.0027 9683	.00271450	00643527	
EPH VX		.0011E9C6	.00041295	00041161	00154181		00352349	
EPH VY		00360835	-06505322	00505273	00233773	.00472872	0045>541	
EPH VZ		.30367985	00937415	. 30937194	.00750313	01559198	.01534058	
		20100000	24177700	04403474	- 62-74555	.00558601	.00375519	
PS 1		29509026	01173729	.01192471	02678965 01696079	01312073	-02274111	
* LON 1 * Z-nT 1		.10333245	.96853779 .52593661	52598314	02171469	01312073	4298519	
PS 2		.105175t3	04802430	. 14887719	.00155807	872338	00927611	
- เอน ร		.33649027	.04878664		02145719		01902525	
Z-HT 2		.49581765	52485107	. 52498924	.02348644	1777499	04469942	
RS 3		0.03300000	0.06440668	0.10000003	0.00000000	0.00000000	3.00000000	
LON 3	.,	. 06642129	.05557186	15548488	.01819799	01258009	.01978406	·
Z-HT 3		0.00000000	0.0000000	0.10000000	u.00000000	0.60000666	3.60000000	
بالمستحدث فينسسب								
SCLVE-FOR	PARAMETERS							
STANCAPE DEVIATION	S AND CORRELATI	CN COEFFICIENTS						
	TO DEV	ACCPRO	CCNE -	CLOCK	EPH X	EPH Y-	EPH Z	
		EPH VX	EFH VY	EPH VZ				
ACCPFC .4	1640616E-02	1.0000000						
	1814265E+u1	91EAL7F2	1.00000000					
	601145E-J1	99785133	.91771351	1.00000000				
	655537E+14	CG037653	.00624410		1.00107220			
	1989513E+94	.00018759	.0000000939		.94775200 .	1.00400000		
EFH 2 .11	361232E+54	00076498	.00027991	00033499	-91467210	.84371450	1.00000-00	·
EPH VX .98	1094705E-03	00172745 1.00000000	.00144431	.10113295	.14329953	.08000805	7508666	
EPH VY .9	587672E-33	.00076222	00132345	18155417	-36800496	.13766438	.06232587	
		.03336027	1.00000000					
EPH VZ .97	2543226-03	.00216751	00112040	.10046017	. 13397563	.0329.323	. 1519448	•
الراء والمحجوري ومنتمانيا المتحجزية ومتجهورو والحجيب		-03504483	00557982	1.00000000				

	化氯化二甲基酚二甲基酚二								
RS 1		.007227939		.00187168	.00255337	30302951	00154938		
LON 1		0003950 .00437310		.06042553 03415027	.06470203	.30197365	_ 00074614		
		CC03772		.30633227		• • • • • • • • • • • • • • • • • • • •	00078548		
Z-HT 1		.00584338		-08139106	00365275	.02182783	65159141		
		6011039	1 .00134237	.30073927			100000		
RS 2		((12111)		03117245	.00082224	00263412	.00476675		
10"		.0001636		00023934					
LON 2		. 10336714		01402000	.00013408	.90185742	006úó1∠6		
Z-HT 2		-000u349		. 30020949 03161662	0.0756447	- 00007147	054645		
		036360,31 -0011457		10081213	.00366443	02183417	.05161520		
RS 3		C. 3000000		0.000000			J. 6666666	· · · · · · · · · · · · · · · · · · ·	<u> </u>
		0.3038560		0.0000000					
LCN 3	<u> Paragonalisa da manganan kabupatèn kabupatèn kabupatèn kabupatèn kabupatèn kabupatèn kabupatèn kabupatèn kab</u>	- 60 3 6 6 6 4 3	55366762	00387013	.00039605	.00181472	+. 60703267		
		0000200		.10025662					
Z-HT 3		0.00000000		0.0000000	0.0000000	0.00000000	0.00000000		
		0.000,000	0.60066300.	0.0000000			·	·	
S/C UNCER	TAINTY RELATED	E TO EPHENERIS BODY							•
2,0 0,000	The state of the s								
									
STANDARD DEVIA	TIONS AND CORR	ELATION COEFFICIENT	S					•	
							- S		<u>.</u>
	STO DEV	X	Υ		VX	VY	VZ		
	.Z1666284E+74	1.03300000						<u> </u>	
Ÿ	.109818926+14								
2	-11239320E+34	•91633331	.8475025%	1.00000000					
AX.	.16315716E-02			.00126816	1.0000acco				
• • •	.10516533E-02 .11392693E-02			.04174655	06317827	1.60000000	1.1.2.2		
• VZ	*************	.03229487	-01897411	•15496842	.16951370	18554088	1.00105656		
FOSITION	EUB-ELOCK								
			9—						
E-VALS IS	CFT) -	EIGENVFCTORS							
	202531E+04	71366966	292954 3454863						
	346879E+03		120250 .64868E3					• .	
	557106E+03	2624439368							
							·		
E-VALS IS	CFT)	LIGENVECTORS							
								_	
	100779E-02		536966 .0795272						
	958481£-03 1238 4 3E-02		946905 .6148426 215274 .7846297						
	7E3043E_RC	**********	215274 .7846297	3					
			•						
			· · · · · · · · · · · · · · · · · · ·		- 24 - 10 - 10 - 10 - 10 - 10 - 10 - 10 - 1	 		 	
		دور بسرو المستجور الدور بمنوضو وكرار				•			
					4. 5.				
								· · · · · · · · · · · · · · · · · · ·	

*

		JOB NO. RUN DATE	J8/30/74
	************	**************	***************************************
SCHECLLED TRAJECTORY TIME 570.0000 DAY			
SIN FILE TRAJECTORY TIHE "570.0000 DAY	5		70
entre de la companya de la companya La companya de la co			ORIGINA OR POO
PEASUREMENT CODE = 4123	وأعلمه ووالمرابع والمعاجب والموادي	والوسوس بربار وستنشد سيبعي المنسجد أراطه الدوميع	
3 STAR-PLANETANGLES			꼬 입
			POOR :
PEASUREMENT WITH STARS 3 2 1			S P
S/C CECLINATION = . 56.9368 CEG.			
en de la companya de La companya de la companya del companya del companya de la companya del la companya de la	ووهائه مصفقهم والمهاد والمستقدم المهاجي الأراب الماسيحي الماسا الماسية		
S/C LCNGITUDE = 21.2515 DEG.			H A
			QUA A
김 교통학생에 된 김 리스탈의 회원 시간이다.			둼
			■ 7
	CONTECL PHASE 7	PRIMARY B	OUT 20M
	PRESENT S/C PASS- 1486.8H205628 FOWER AVAILAELE 17.57>95163		DA EVCKE PODA EVCKF
## 63463444	21.07.373103	TARGET DU	
S/C RELATIVE STATES X	van de variable vari		MAGNITUCE
SUN POSITION .13432466665646+69	.9772540243J98JE+08	.29783037654459E+C8	.1cc76456003016±+09
VELOCITY25961970610346E+02	-29556322918717E+J1	156424488528302+01	.301483U6686363C+02 =
E-RIH PUSITION45924233755846E+47	.44354565032780E+08	.29783037654459E+08	.53c5o9:2735873E+08
VELCCITY 188196712122596+02	24753255473182E+U2	1564244885283CE+U1	-311344266533672+08
얼마들은 어린이 하는 사이지가 된 번 작용되는 마음이다.			
ENCKE POSITION50315712305555E+07	446367090605836+07	25259258628199E+67	.71848012129918E+07
VELOCITY .32157884220742E+01	.25197705447:852+01	-14088496909091E+ 01	-43215039309425E+01
CACCELERATIONS X		2	HAGNITUCE
37088286804267E-05	26982982791724E-05	8223126922E497E-06	.465966687852636-35
ERTUREING EOCIES 36895665213965E-11	12232523313180E-09	7778408u272292E-10	.145013635677668-09
THRUST496646970929016-06	54c07825345629E-07	12221028913914E-06	.51432679963871==66
RADIATICH PRESSURE 0.	C.		•
KNOWLEDGE COVARIANCE BEFORE THE MEASUREMENT AT	570.00000 DAYS		
FSS POSITION = .11569008E+03 KH			
RSS VELOCITY = .365281412+00 F/S		:	
			The second secon
STATE PARAMETERS			
alan kanang at kanang ang kanang kanang kanang at kanang ang kanang at kanang at kanang kanang kanang kanang k		•	
TANDARD DEVIATIONS AND CORRELATION COEFFICIENTS			
المراقع			
STO DEV	Y Z		V2
x .34611336E+52 1.00000000	المستخصص المسابق المسابق المستخدم المهادي المادي	A Company of the Comp	
Y .59174063E+0286444157	1.0000000		
2 .93191633E+02 .87976630	95950921 1.00000000		
VX .22575338E-03 .28537631 VY .15374511E-0345899775		00300000 52269463 1.00004000	•

The second of the second secon

ACCPEC		05858093	30523426	.03130066	39901352	. 33995375	38951255	
CONE		.06515052	04764553	.44910769	. 42925455	50694624	.54265490	
CLOCK		.07787766	01968211	.02346048	.43561747	41252281	.46085870	
EPH X		.00678119	00603726	. 10613180	··· C0052759	.00169555	30218695	
EPH Y		62722935	.02892089	2904088	00061031	00165431	.00436713	
EPH Z		. 05923667	úEc47934	16655828	.00184274	.00446997	01090453	
EFH VY		.00438798	00413091		00056558	50224197	00257487	
EPH VY			.01001585	:0998347	00557141	.01358889	01258351	
		00822494						
EPH VZ		.00562036	00929294	.0913683	.01149051	02988927	. 32879376	
PS 1		.22904839	00922637	.(2298843	 03134601	.00086353	.01344464	
LON 1		.15110624	.06254711	64972037	.02751323	0237:785	.05172731	
Z-HT 1		53176172	.57178111	:7377517	00693918	06195031	.11535642	
PS 2		.10643010	0405/557.	.64560944	00263542	.02769527	12432632	
LCN Z		.09518342	.03523854	C3116182	.03210626		.04269869	
Z-HT Z		.53355881	57691977	.57323463	1381921	.06173490	11376937	•
			0.00000000	0.000600.0	0.0000000	0.0000000	0.00000000	
RS 3		0.00000000				32232353	.04472810	
LON Z Z-HT 3		.11666352 0.0000000	0.0000000	03831261 0.00000000	0.00000000	0.00000000	0.0030:030	•
Z-HI 3		0.30000000	0.0000000	0.00000000	4.4444444	0.00000000	0.0000000	
	الم صافعة المالية المعلى والمحكور العالم المالية. المح كم المالية المعلى والمحكور العالم المالية المالية المالية المالية المالية المالية المالية المالية المالية			manager of the end of				
SCL	VE-FOR PARAMETERS							
440420 DEN	TATTONS AND CORRELATION	. COEFFICTENTS						
MINIMED DEV	INTIONS AME CORRECATION	N COEFFICIENTS						
	STO DEV	ACCPRO	CONE	CLOCK	EPH X	EPH Y	EPH Z	
		EFH VX	EPH VY	EPH VZ				
•				-				
ACCPF0	.23823819E-12	1.00100000						
COLE	.3160529GE-72	97711481	1.00000-00					
CFCCK	.791620586-02	99353091	9688/315	1.00000000				
EFH X		.00035681	"JCC90540 TT		1.00300000	ئىشىپ		- Jest 19
	.21857813E+34					4 30030000		- B
EPH Y	.19258705E+04	00035896	.00139423	.00079465	.96325775	1.00000000		-
EPH Z	.113E619EE+04	.0037141	00316747	03152443	.93007769	.89491119	1.0000000	員是
	007706746-07	2. 141.076	00105749	03063711	.24192476	.14374880	.14072852	POOR
EPH VX	.92772638E-03	.0.114875		03003/11	*54145410	. 143/4000	*14015625	08
		1. 330000						<u> </u>
EPH VY	.94247822E-J3	06101833	00275367		.14429147	.25642197	.12789315	
		.1363092€	1.0000000					POOR
EPH VZ	.895C1276E-03	0002453C	.00725710	.00368949	.08250.55	.07334851	.28.67418	70
		.1321998€	(3264537	1. 10000000				
	er time if the first of the							드
Page 18 Control								7
وستنسو تجيع أأراب	سپسجی یہ مشتقع شاوی سیاتی	.00193134	- 01474E38	01555217	.00186547	00284174	00094636	
" FS 1"					**********	U U E U T I M		F4 1
		001/0467	.0010E524	.00158782	00.27000	0012255	- 0077/027	H 1
LON 1		. Ou 166131	90427175	00143550	.00u77088	.00133553	00736823	OUALITY I
		00005187	00083847	.00183622				
Z-HT 1		00397292	.03112354	.0:402587	00495304	.02113717	04862452	
		Uu308671	.00153798	.00532728				
PS Z			00980811 "	00417388	68093372	00234980	. 80397564	•
		.03043478	.0012795	00115808				
LON 2		. 66102149	00659976	0.228415	.00037760	.66122781	00491681	
		.00640032	00106603	0127663				
Z-HT 2		00353030	02752516	50994500	.00495925	02113104	.04862566	
2-71 2		.00372058	[(153640	005J9980		1		
RS 3		- 0.00000000	0.00003000	0.0000000	0.0000000	t.cooccoo-	0.00300C00 .	
		5-06-00700	0.0000000	C.10000000	****	AB. 24 - AC		
LON 3		.00127080	00514566	0(176194	.00054402	.00121422	00581639	5 - 1 - 1 - 1 - 1 - 1
		.00016505	0090213	.147451				
Z-HT 3		0.00303330	0.0000000	3.06000000	0.00000000	0.0000000	7-00000000	
		0.0000000	0.000,0000	0.6600000				

							and the second s			
ANDARC DEV	TATIONS AND CORP	ELATION CO	EFFIGIENTS							
	- ern neu	J	v			- 1190 \				
	210 DEA	ر المجال الم	***	T	4	VX.	WY	V2		
Ž										
					1-00066640	The second second				
V¥				.13862580	-14600719	1.00000000				
VY				.25545894	.12217610	.11193592	1.00000000			
VZ	.92.52975E-03	-	. 08161709	.06837518	.28119145	.16230AB2	3636583	1.00300200		· ·
P021110	N SOB-BLOCK			a da sa 🔓						
E-VALS	(SCRT)	LIGENVECT	OPS							
									·	
		000/6	182 - 6695.							
					· · · · · · · · · · · · · · · · · · ·			<u></u>		
E-VALS	(SCAT)	EIGENVECT	ORS							
	-1027272-02	.77234	434*** 4333	8535	93					
	. 557946E+03	10455	756 . eGe1							
	. 63323FF-03	- 65664								
	·	020346	PS2 *3859.	9293 .669195	68	ويستني براعجت والأوار أوارا			<u> </u>	
OBSERVATI	**************************************		623 .3988	9293 .669195	68	فينسب الدائمون والديدان تفايداه				
VY .92.5277796-3										
STANDARD DEVIATIONS AND CORPELATION COEFFICIENTS X										
	CN MATPIX 94311197	3c+67 +.	•991865639E	-07 .99567	9187E-09					
×	94311197	3c+67 +.	.991865639E .886687274E	-07 .99567 -0769393	9187E-09					
X Ž	94311197 545672 83609731	3c+67 8E-37 9E-07	.991865639E .886687274E .408864900E	-07 .59567 -0769353 -07 .12064	9187E-09					
X Z VX	94311197. .5952672. .83669731	3c+67 8E-37 9E-07 0.	.991865639E .886687274E .408864900E	-07 .99567 -0769353 -07 .12064	9187E-09					
X Z VX	94311197. .5952672. .83669731	3c+67 8E-37 9E-07 0.	.991865639E .886687274E .408864900E	-07 .99567 -0769353 -07 .12064	9187E-09					
X Z VX	94311197. .5952672. .83669731	3c+67 8E-37 9E-07 0.	.991865639E .886687274E .408864900E	-07 .99567 -0769353 -07 .12064	9187E-09					
X Y 2 YX VY VZ	94311197 .54952672 .83669731 G.	3c-67 8E-37 9E-07 6 6	.991865639E .886687274E .408864900E	-07 .99567 -0769353 -07 .12064 0.	9187E-09					
X Y Z Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	94311197 .59562672 .83669731 C. C.	3c+67	.991865639E .886687274E .408864900E	-07 .95567 -0769353 -07 .12064 0.	9187E-09					
X Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	94311197 .58952672 .83669731 	3c+67 8E-37 9E-97	.951865639E .886687274E .408864980E	-07 .99567 -0769353 -07 .12064	99187E-09 18479E-07 15453E-06					
X Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	94311197 .5952672 .83609731 C. 0. 0.	3c-67 8E-37 9E-07 G G G G G G G G G G G G G G G G G G	.991865639E .886687274E .408864900E	-07 .99567 -0769393 -07 .12064 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0	79187E-09 8479E-07 75453E-06					
X Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	94311197 .58952672 .83669731 C. .0.	3c-67 3E-37 9E-97 6 6 7 8E-07 8E-07	.991865639E .886687274E .408864900E	-07 .99567 -0769393 -07 .12064 0. 0. 0. 0.	9187E-09 8479E-07 5453E-06					
X Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	CN MATRIX 94311197 .599326721 .83609731 C. C. C. C94311197559026721836697311	3c+67 8E-37 9E-07 0 0 0 3E-07 8c-07 9E-07 9E-07	.991865639E .886687274E .408864900E	-07 .95567 -0763393 -07 .12064 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0	9187E-09 8479E-07 5453E-06					
X Y Y Y Y Y Y Y Y Y ACCPPC CONE CLOCK EPH Y EPH Y EPH Y EPH Y EPH V	GN MATRIX 94311197 .5952672 .83609731 G.	3c-67 3E-37 9E-07 0. 0. 0. 3E-07 8c-07 9E-07 9E-07	.991865639E .886687274E .408864900E	-07 .99567 -0769353 -07 .12064 0. 0. 0. 0. -07 .99567 -07 .69393 -0712064	9187E-09 8479E-07 5453E-06					
X Y Y Y Y Y Y Y Y Y ACCPPC CONE CLOCK EPH Y EPH Y EPH Y EPH Y EPH V	GN MATRIX 94311197 .5952672 .83609731 G.	3c-67 3E-37 9E-07 0. 0. 0. 3E-07 8c-07 9E-07 9E-07	.991865639E .886687274E .408864900E	-07 .99567 -0769353 -07 .12064 0. 0. 0. 0. -07 .99567 -07 .69393 -0712064	9187E-09 8479E-07 5453E-06					
X Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0	3c-67 - 8e-37 9E-07 G G G G G G G G G G G G G G G G G G G	.991865639E .886687274E .408864900E	0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0	9187E-09 8479E-07 5453E-06					
X Y Y Y Y Y Y Y Y Y Y ACGPPC CONE CLOCK EPH Y EPH Y EPH Y EPH Y EPH Y EPH VY EPH VY EPH VY	GN MATRIX 94311197595267283609731	3c-67 3c-67 3c-37 9c-97 6 6 6 0 3c-67 6 0 3c-67 6 0 0 0 0 0 0 0 0 0 0 0 0 0	.991865639E .886687274E .408864900E	-07 .99567 -0769353 -07 .12064 0. 0. 0. 0. -0795567 -0712064 -0. -0.	9187E-09 8479E-07 5453E-06					
ACGPPC CONE CLOCK EPH Y EPH Y EPH Y EPH V EPH VZ EPH VZ	GN MATRIX 94311197 .59562672 .83669731 G.	3c+67 3c+37 9c-37 9c-07 0. 3c-67 9c-07 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.	.991865639E .886687274E .408864900E .991865639E .886687274E .40886490GE	-07	9187E-09 8479E-07 5453E-06					
ACCPPC CONE CLOCK EPH X EPH Z EPH VY EPH VZ PS 1 LON 1 Z-HT 1	CN MATRIX 94311197595267283609731' C0. 0. 0943111975590267283669731' -00.	3c+67 8E-37 9E-07 G G 3E-07 8c+07 9E-07 0 0 0 0 0 0 0	.991865639E .886687274E .408864900E	-07 .95567 -0769393 -07 .12064 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0	9187E-09 8479E-07 5453E-06					
ACGPPC CGONE CLOCK EPH Y EPH Y EPH Y EPH YZ FS 1 LON 1 Z-HT 1 LON 2	94311197 .58952672 .83609731 C. C. O. O. C. 94311197 56902672 83669731 -0. -C.	3c+67 -	.991865639E .886687274E .408864900E .991865639E .886687274E .40886490GE	-07 .99567 -0769393 -07 .12064 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0	9187E-09 8479E-07 5453E-06					
X Y Z Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	CN MATRIX 94311197599326721 .83609731 C00094311197559026721 -0000000000.	3c+67 8e-37 9E-07 G G 3E-07 8c-07 -0 -0 0 0 0 0 0 0 0 0 0 0	991865639E 886687274E 408864900E	-07 .95567 -0763393 -07 .12064 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0	9187E-09 8479E-07 5453E-06					
ACGPPC CGONE CLOCK EPH Y EPH Y EPH Y EPH YZ FS 1 LON 1 Z-HT 1 LON 2	94311197 .58952672 .83609731 C. C. O. O. C. 94311197 56902672 83669731 -0. -C.	3c+67 -	991865639E 886687274E 408864900E	-07 .99567 -0769393 -07 .12064 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0	9187E-09 8479E-07 5453E-06					

	19371823E-07 0.		0.						
C.	•	225619371823E-07	0.						
€.	G.	e per di estado en la como la contractiona de la co	-22501937182	3E-07		· · · · · · · · · · · · · · · · · · ·	*****	• • • • • • • • • • • • • • • • • • • •	
SPEHT + E									
	ne di presente di 1996	2224 A. C. C. C.							
	62183175E-07 .	205457818416E-08	.63148439190						
		249537783555E-07	77253805301			0.6	\		
.6314	84391969E-09	772536053018E-09	.26201530263	8E-07		₩ }	1		
	, (OF POOR (í		
GAIN PATRI	標準 시 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그					79 C			
						25	ř.		
	عال بارانات م راسلها استوب	eje i di li di di	****		·	<u> </u>			
×	717753675E	•u3160571Eu	FLAGA 5217	40132E+04		#0 P	and the second s		
Ÿ	.652501345E			419351+04		30°			
	1091748212			20876E+04					
vx	224662746E			94143E-01		7.7			
VÝ	3377699d1L			56362E-01					
vż	.469667434E			5997EE-01		PAGE			
	14030014345		UL UK 19999	3357CE=VA		POOR QUALITY			
						13 13	. •		
ACCPFC "	.2322379432	-0126551109	5E-015739	86237E-02	or community in the second				
CONE	367121939E			8108EF+00					
CLOCK	621222316E			C2058E+U0				*	
EPH X	.676537801E			30107E+05				 	
EPH Y	5463235742			C960&E+06					
EPH Z	212263864E			5642CE+06					
EPH VX	.696794433E	•00 .73560233		74508E-01					
COU LY									
ESH FA	401964538E	+i064426u51	EE+00 .5757	0416EE+60					
EPH VZ	605777709E	+0025698351	7E+C39741	97742E+60					
EPH VZ	605777709E	+0025698351 THE PEASUREMENT	7E+C09741 AT 570.00000 KH	97742E+60					
EPH VZ	605777909E CCVARIANCE AFTER RSS POSITION =	+0025698351 THE PEASUREMENT -11567480E+03	7E+C09741 AT 570.00000 KH	97742E+60					
EPH VZ	605777909E CCVARIANCE AFTER RSS POSITION =	+0025698351 THE PEASUREMENT -11567480E+03	7E+C09741 AT 570.00000 KH	97742E+60					
EPH VZ	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELCCITY #	+0025698351 THE PEASUREMENT .11567480E+03 .36508400E+0C	7E+C09741 AT 570.00000 KH	97742E+60					
EPH VZ	605777909E CCVARIANCE AFTER RSS POSITION =	+0025698351 THE PEASUREMENT .11567480E+03 .36508400E+0C	7E+C09741 AT 570.00000 KH	97742E+60					
EPH VZ	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELCCITY #	+0025698351 THE PEASUREMENT .11567480E+03 .36508400E+0C	7E+C09741 AT 570.00000 KH	97742E+60					
EPH VZ KNOWLEDGE	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELCCITY #	+0025698351 THE YEASUREMENT .11567480E+03 .36508400E+0C	7E+CJ5741 AT 570.00000 KH M/S.	97742E+60					
EPH VZ KNOWLEDGE	605777909E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY # E PARAMETER ATIONS AND CORRECT	+0025698351 THE YEASUREMENT .11567480E+03 .36508400E+0C	7E+CJ5741 AT 570.00000 KH M/S.	97742E+60 DAYS					
EPH VZ KNOWLEDGE	605777909E CCVARIANCE AFTER RSS POSITION = RSS VELCCITY =	+0025698351 THE YEASUREMENT .11567480E+03 .36508400E+0C	7E+CJ5741 AT 570.00000 KH M/S.	97742E+60	VX	VV	VZ		
EPH VZ KNOWLEDGE	605777909E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY # E PARAMETER ATIONS AND CORRECT	+0025698351 THE YEASUREMENT .11567480E+03 .36508400E+0C	7E+CJ5741 AT 570.00000 KH M/S.	97742E+60 DAYS	٧x		VZ.		
EPH VZ KNOWLEDGE STAT	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY = PARAMETER TIONS AND CORRECT STO DEV	+0025698351 THE PEASUREMENT .11567480E+03 .36508400E+0C	7E+CJ5741 AT 570.00000 KH M/S.	97742E+60 DAYS	٧x	***	VZ.		
EPH VZ KNOWLEDGE	605777909E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY # E PAREMETER STO DEV .34509252E+32	+0025698351 THE PEASUREMENT .11567480E+03 .3650840BE+0C	7E+CJ5741 AT 570.00000 KH H/S.	97742E+60 DAYS	vx	**	vz		
EPH VZ KNOHLEDGE STAT ANDARC DEVI	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY = PARAMETER ATTONS AND CORRECT STO DEV .34608252E+J2 .59165935E+J2	+0025698351 THE YEASUREMENT .11567480E+03 .36508400E+0C	7E+CJ5741 AT 570.00000 KH M/S.	97742E+u0 DAYS	VX	VV	VZ		
STAT ANDARC DEVI	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY # E PARAMETER ATTONS AND CORRECT STO DEV .34608252E+32 .59165935E+32 .9317946E+:2	+0025698351 THE PEASUREMENT .11567480E+03 .36508400E+0C RS ATION COEFFICIENT X 1.003003086442125 .87974846	7E+CJ9741 AT 570.00000 KH M/S. S V 1.3000000095550510	97742E+w0 DAYS 2 1.30000000			VZ		
EPH VZ KNOWLEDGE STAT ANDARE DEVI	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY = PARAMETER TIONS AND CORRECT STO DEV .34608252E+J2 .59155935E+J2 .93170466E-J2 .22571651E-J3	25698351 THE PEASUREMENT .11567480E+03 .36508400E+0C ATION COEFFICIENT X 1.0030003086442125 .87974846 .28521386	7E+CJ9741 AT 570.00000 KH M/S. 5 4 1.3000300 95953510 18618678	2 1.3000000 19382548	1.80000000		VZ.		
STAT ANDARC DEVI	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY # E PAREMETER STO DEV .34508252E+32 .59165935E+32 .9317940E+32 .22571651E-33 .15362033E-33	25698351 THE YEASUREMENT .11567480E+03 .36508405E+0C ATION COEFFICIENT X 1.0030003086442125 .87974846 .2852134625875531	7E+CJ9741 AT 570.00000 KH H/S. 1.JU0030009955310186186783557J557	2 1.30000380 19382548 35246465	1.0000000 52249902	1.00030000			
STAT ANDARE DEVI	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY = PARAMETER TIONS AND CORRECT STO DEV .34608252E+J2 .59155935E+J2 .93170466E-J2 .22571651E-J3	25698351 THE PEASUREMENT .11567480E+03 .36508400E+0C ATION COEFFICIENT X 1.0030003086442125 .87974846 .28521386	7E+CJ9741 AT 570.00000 KH H/S. 1.JU0030009955310186186783557J557	2 1.3000000 19382548	1.80000000		1.0030306Q		
STAT ANDARC DEVI	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY # E PAREMETER STO DEV .34508252E+32 .59165935E+32 .9317940E+32 .22571651E-33 .15362033E-33	25698351 THE YEASUREMENT .11567480E+03 .36508405E+0C ATION COEFFICIENT X 1.0030003086442125 .87974846 .2852134625875531	7E+CJ9741 AT 570.00000 KH H/S. 1.JU0030009955310186186783557J557	2 1.30000380 19382548 35246465	1.0000000 52249902	1.00030000			
STAT ANDARE DEVI	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY # E PAREMETER STO DEV .34508252E+32 .59165935E+32 .9317940E+32 .22571651E-33 .15362033E-33	25698351 THE PEASUREMENT .11567480E+03 .36508400E+0C RS 1.0030003086442125 .87974846 .285213625875531 .21855659	7E+CJ9741 AT 570.00000 KH M/S. 1.300030009695361018618678 -3597355725749182	2 1.0000000 19382548 35246465 .25710899	1.8000000 52249902 .64071870	T.00030000 98296947	1.00000000		
STAT ANDARC DEVI	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY # E PAREMETER STO DEV .34508252E+32 .59165935E+32 .9317940E+32 .22571651E-33 .15362033E-33	25698351 THE PEASUREMENT .11567480E+03 .36508400E+0C RS ATION COEFFICIENT X 1.0030003086442125 .87974846 .2852134625875531 .21855659	7E+CJ9741 AT 570.00000 KH M/S. 5 V 1.3003000965591018618678 .3557355725749182 00525767	2 1.0000000 19382548 35246465 .25710899	1.0000000 52249902 .64071870	1.00030000 98296947	1.00000000		
STAT ANDARE DEVI Y Z VY VY ALCOPEC GCIVE	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY # E PAREMETER STO DEV .34508252E+32 .59165935E+32 .9317940E+32 .22571651E-33 .15362033E-33	25698351 THE PEASUREMENT 11567480E+03 36508400E+0C ATION COEFFICIENT X 86442125 86442125 86442125 25875531 21855659 65856241 05856241	7E+CJ9741 AT 570.00000 KH M/S. 5	2 1.30003000 19382548 -35246465 .25710899	1.80000000 52249982 .64071870 39405616 .42917831	1.00030000 98296947 .34020112 50701650	1,00000000 38977905 -54273698		
STAT ANDARE DEVI ALCOPE COLE CLECK	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY # E PAREMETER STO DEV .34508252E+32 .59165935E+32 .9317940E+32 .22571651E-33 .15362033E-33	25698351 THE PEASUREMENT .11567480E+03 .36508400E+0C RS 1.0030003086442125 .87974846 .2887553121855659 05856241 .06504381 .7781628	7E+CJ9741 AT 570.00000 KH M/S. 1.JU00J0U096950910186186703557J55725749182 00525767047503880196CC79	2 1.30003000 .19382548 35246465 .25710899 .00132375 .04850742 .J2337997	1.0000000 52249902 .64071870 39405616 .42917831 .4350331	1.00000000 98296947 34020112 50701600 41257831	1.00000000 38977905 .54273698 .46103288		
STAT ANDARE DEVI ALCPFO COLE LLCCK EFH X	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY # E PAREMETER STO DEV .34508252E+32 .59165935E+32 .9317940E+32 .22571651E-33 .15362033E-33	25698351 THE PEASUREMENT .11567480E+03 .36508400E+0C ATION COEFFICIENT X 1.0030003086442125 .87974846 .2852134625875531 .2185565945856241 .06504321 .7781648 .00745135	7E+CJ9741 AT 570.00000 KH M/S. 1.JU0030009995091018618673 .3557J55725749182 00525767047533880196007900664792	2 1.0000000 19382548 35246465 .25710899 .00132375 .04695742 .12337497 .04675102	1.0000000 5224900 .64071870 39405616 -42917831 -4350331 -00008512	1.00030000 98296947 98296947 50701600 41267831 51104822	1.00000000 38977905 -54273698 -46103388 30193510		
STAT ANDARE DEVI Y Y Z VY VZ ACCPFC GCIE CLCCK EPH X EPH Y	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY # E PAREMETER STO DEV .34508252E+32 .59165935E+32 .9317940E+32 .22571651E-33 .15362033E-33	25698351 THE PEASUREMENT 11567480E+03 36508400E+0C ATION COEFFICIENT 86442125 86442125 86442125 25875531 21855659 45856241 0778162 0778162 0778162 0778162 0778165	7E+CJ9741 AT 570.00000 KH M/S. 1.J00030009595951018618678 -3557355722749182 00525767047503880196027902988127	2 1.0000000 19382548 35246465 .25710899 .00132375 04850742 .J2337997 .Gu675102 03000041	1.0000000 52249902 .64071870 39405616 .42917831 .43500311 .00008512 00160901	1.00030000 98296947 34020112 50701630 41267831 .3312-822 .0056336	1.00000000 38977905 .5427368 .46103388 30153510 .00223046		
STAT ANDARE DEVI ALCPFO COLE CLOCK EPH Y EPH Z	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY # E PAREMETER STO DEV .34508252E+32 .59165935E+32 .9317940E+32 .22571651E-33 .15362033E-33	25698351 THE PEASUREMENT 11567480E+03 36508400E+0C ATION COEFFICIENT X 86442125 86442125 8757531 25875531 21855659 4585659 4585659 4585659 4585659 4585659 4585659 4585659	7E+CJ9741 AT 570.00000 KH M/S. 1.JU00J0U099950910186186783557J5572>749182 00525767047503880196007900684792006847920068767612	2 1.0000000 19382548 -35246465 .25710899 .00132375 .04850742 .J2337997 .00675102 -03000041	1.8000000 52249912 .64071870 39105616 .42917831 .435603:1 .0008512 00160901 .00375472	1.00030000 98296947 .34020112 50701650 41267831 .5319-822 .00056336 00017024	1.00000000 38977905 .54273698 .46103388 30153516 .00223046 00649114		
STAT ANDARE DEVI Y Y Z VY VZ ACCPFC GCIE CLCCK EPH X EPH Y	605777709E CCVARIANCE AFTER RSS POSITION = RSS VELOCITY # E PAREMETER STO DEV .34508252E+32 .59165935E+32 .9317940E+32 .22571651E-33 .15362033E-33	25698351 THE PEASUREMENT 11567480E+03 36508400E+0C ATION COEFFICIENT 86442125 86442125 86442125 25875531 21855659 45856241 0778162 0778162 0778162 0778162 0778165	7E+CJ9741 AT 570.00000 KH M/S. 1.JU00300099959910186186783557355725749182005257670475388019606790066479200664792006647920066479200664792006647920066479200664792	2 1.0000000 19382548 35246465 .25710899 .00132375 04850742 .J2337997 .Gu675102 03000041	1.0000000 52249902 .64071870 39405616 .42917831 .43500311 .00008512 00160901	1.00030000 98296947 34020112 50701630 41267831 .3312-822 .0056336	1.00000000 38977905 .5427368 .46103388 30153510 .00223046		

ANGARG DEVI	TATIONS AND CORRELATI STO DEV	ON COEFFICIENTS		2	VX	VY	٧Z	
								•
577 HEAS	RYAINTY RELATIVE YO					.		
"Z-НТ 3		0.00363050	0.00000000	0.00000000	0.0000000	0.00000000	0.0000000	* **
LON 3		.0.127271	00516955 00119273	00177220 .00145951	.00058910	.00109615	00561847	KI.
RS 3		0.00000000	0.0000000	0.00000000	0.00306000	0.60000000	0.2020000	
Z-HT 2		00352500 .00430324	02749951	00668949	.0051700	02097308	.04840955	<u> </u>
FON S		.00102395	ui662103 00138582	00229448 .0u102403	.00043952	.40110810	00470545	
RS 2	andreasement of the state of th	.00005702 .00047248	00979875 .0uJ22813	00416946 00142713	.00194403	00229350	.01386127	OF POOR (
Z-HT 1	*	00397816 00426130	.00148296	.01401638 .00659973	00516095	02098084	04891572	日で
LOW 1		.00166288 00630188	00429347 00113217	00144634 .00230161	.00080414	.00120602	00713887	T R
PS 1		.00192747 00233256	.01475058 .00126340	.00555587	.00174829	00283807	00089675	20
EPH WZ	.67434C83E-13	00005441 .15750653	.00876234 .00202783	.00422569 1.00000000	.09214382	.08346044	.26574654	
EPH VY	.92945582E-33	.00038J50 .16473e21	1.0000000	0J216916	.15718103	.45283989	.14146273	
	.91272512E+33	00J29985 1.00000000	00056531	00008422	.23289944		.14586115	
EPH VX						.90881282	1.00000000	
EPH Y EPH Z	.19229049E+34	0003.026 .00035416	00218536	00352445 00107u46	.96892770 .93958298	T.00000000	4 00000000	***************************************
EPH X	.21795999E+J4	.30317319	00065879	00036001	1.00000000			<u> </u>
CLOCK	.7316C992E-52	99353822	.98888277	1.00000000	1. 44.5.21.5			•
CCILE	-31603973E-02	97714840	1.05000000			······································	<u> بريني موسود</u> المراجع والأوام المعالم الموسود	
ACCPEC	.23823747E-32	1.00763370						
فيستواد أراد والع	STO DEV	ACCPRO EPH VX	CONE .	CLOCK EPH VZ	EPH X	ЕРН Ү	EPH Z	
ANDAPO DEVI	TATIONS AND CORRELATE			, , , , , , , , , , , , , , , , , , , 	•			•
SCL!	E-FOR PARAMETERS							<u></u>
Z-HT 3		6.0000000	- 0.0000000	0.00000000		0.00000000	0.0000000	
LON 3	-	.11664767	.64825588	03835255	.02820704	02225441	.04467773	
RS 3		0.00066000	0.00000JuC	0.00000000	0.00.00000	0.20330003	0.00036000	
Z-HT 2		.53363104	57104528	.57335860	01387493	.06162517	11370275	
LCN 2		• 0951o420	.03927998	03120186	00261753	.62767191 62335145	U 2429461 . U 4264675	
2-HT 1 77		53183350 -10645080	.57190614 04059767	57389864 .04503188	00699312	6184281	.11529256	
LON 1		.151,5199	. 6259355	04976464	.02747610	02363038	.0516/251	

X Y Z 6x VY VZ	.21796168E+04 .1922G470E+J4 .1126G456E+04 .940G5690E-03 .93922249E-03 .89895513E-J3	.969 .941 .227	341c1 16133 86694	.0000000 .91334295 .14414807 .25160663 .07882844	1.000000 .14444351 .13654920 .26566155	1.00000000 .13956417 .18731137	1.00000000 03074761	1.00000000		
FOSIT	ICN SUB-BLOCK	يستان وريس الساء الدوور سايا تعير ستعادلت							(
E-VAL	.367365E+04 .367713E+03 .411952E+03	.70522544 67382764 22945013	.6174855 .4221309 6637146	.6097505	,					
E-VAL	102626E-02 .102626E-02 .537761E-03 .800745E-03	.75526045 14494705 63443985	.48 C2932 *.7826341 .3959826	2 *** 60537111	L	•				
									•	
				•	n marin in the seem do not be a grant descriptions					
			***************************************		THE THE PARTY AND THE PARTY AN	***	100			
										-
								-		
	algendarian delega del aggregation de la constitución de la constitución de la constitución de la constitución									
	والمرابع وال			والمستعدد والمستعلق المستعدد والمستعدد والمستعد والمستعدد والمستعد والمستعدد والمستعد						

						JOB NO. RUN DA	IE 08/30/74	
**********	************	***********	*************	**********	********	**********	************	
SC 12	HEGULED TRAJECTORY T IN FILE TRAJECTORY T	THE 570.0000 CA	YS					 '
661	DANCE.	and the second state of the second party of						
						 	are a company and the company and the company and the company of t	

					• .			
JULIAN CATE	2444526.65476	000	CONTROL PHASE	7		PRIMA	RY BODY SLN	
DAYS FFCF L	AUNCH- 570	000	PRESENT SIC MASS-	1486.88205628	KG	FPHEM	RIS RODY FACKE	•••
DAYS FROM	UTCFF- 0.60350	700	PUNER AVAILABLE	17.57595163	K H	IARGE	T BODY ENCKE	
S/C PELATIN		X	Y			Z	NAGNITUCE	
		32868698504£+09 61976616346£+02	.97725402433			7654459E+08 8852833E+01	.1687E45690J01EE*C9	
		19671212259E+G2	.44354565032 2475325547			7654459E+08 8852830E+01	.53c55932/35873E+08	
THEFE BE	والوالون المستعددة المستعدد الروالونونون	+E74370EEEEE.407			2625025	AL 28100C402	.71848312129918E+07	
ENCKE PCS		57884220742E+01	446367090E0			6909091E+01	.43215039305425±+01	
S/C ACCELER	:attrouc	x		e el monte e acción de	المراجع	,	HAGNITUDE	
PRIMARY BC		88286804267E-05				9226497E-06	.465960687852632-05	
PERTUREING THPLOT	POCIES388	956652139656-11	12232523313			0272292E-10	.145013635677.66-09	-
RADIATION F	RESSURE 0.	64697592981E-66***	54207825349	16545-01	0.	8910914E-06	.514326799638712-8E	
Norman e desembra i descriptorado e o	nervenient der im der seine der einstelle der gestellt der	and the same and the same of the same and th	re-part -					· · · · · · · · · · · · · · · · · · ·
	C PASS STANDARD BEVI							
CONTFOL	.7836 KNOWLEDGE	= 52.1613			· · · · · · · · · · · · · · · · · · ·		and the second s	
	GE COVARIANCE AT MAN			IYS				
BASEO	ON MEASUPERENTS UP T	O 570.0000 DA	YS				war and the same a	
	PSS POSITION =	.11567480E+93 KM						
	RSS VELOCITY =	.365084C0E+0C M/	'S			 		
		•						á
etanariae - Lange - La e - Lange								
STA	NTE PARAMETERS							<i>-</i>
والمعارضين والمتعارض والمت	بيسيسف ويسان والمستنس							
STANDARE DE	ITATIONS AND CORRELAT	ION COEFFICIENTS						74 8
	STO DEV	. x		- · · · z	vx			
							· · · · ·	
	.346C8252E+J2	1.00000000	and the same same and the same					
$\overline{\hat{\mathbf{y}}}$.59165935E+02	86442125	1.0000000					•
	.93178968E+02 .22571651E-03	.87974846 .28521366		00003000 19382548 1.	. 00000000			
νγ	.153623C3E-33	25675531	.35570557	35246465	52249502	1.00003300		
VZ	.242161A6E-73	. 21895695	25744184 .:	25710099 .	64471870	98296947	1.0000000	

_	_
r	
	_
₹	
ι	

and the company of the party of the

	05856241	00525767		39305616	.34020112	38977915	
	,			.42717831	50701600	.54273698	
	.07/81638	0196.079	.6233/597	.4356u311	41267831	.46103366	
 		00664792	.006751.2		.00164822	00153510	
	02797069	.32988127	03060041	001639.1	.00156336	.00223046	
	.00085215	06867612	.06873611	.10375472	30017024		
•	. 0592542						
	01056319						
	.068888	01158309	.01138121	.01410566	13/45411	.03603141	
	.2290783u	80923393	.02299609	03134505	.00080766	.01345223	
							•
a part of which comments and the contract of t							
	0.0000000	0.00000000	0.30000000	0.00000000	0.00000000	0.00388860	
E-FOR PARAMETERS							
ATTONS AND COPPELATE	ON COFFETCIENTS					<u></u>	
				<u> </u>	•		
SYD DEV	ACCPRO EPH VX	EPH VY	EPH VZ	ЕРН Х	EPH Y	EPH Z	
23823747E-02	1.00000000				سدائرانوادا والسلا		
.31F.3973E-02	97714840	1.000000048					
.7916C992E-32	49353022	.988082/7	1.00003330				
.21795999E+04	.0C017319					• • • • • • • • • • • • • • • • • • • •	
							j
•11285058£+04	.00035416	00218536	1010/646	. 93450549	**********	1.00000000	
.912/25128-03	01029985	00056031	10008422	.23269944	.14930036	.14586115	
	1.00000000						
.9294558ZE-03			10216916	+15/18103	.25281989	.141462/3	
			#81 80F00	60041.702	004.504.5	nednaet.	,
.8/434083E-03					. 4034044	-20274634	
	•15/50653	. 00202763	1.03030030				
						•	
The second secon	C0192747	.01475058	L0555587 -	.00174829	00283867	00089675	
		.00126540	.00187279		******	2024 402	1
				.00088414	.00120602	00/13887	<u>ا</u> معام اسماد تحدر مساعد مساوع وجود ر
				_ 8054-055	020224	+ 56414573	
				00210055	.02498484		
					30229350	- 0.386.127	-
					10055 3033		
				.00343952	.0.110810	00470545	
and the second control of			.00162403			* ***	
	00352500	02749951	00493534	.00517004	02097348	.04840955	
	.03430324	63148090	40664949				
	0.00000000	0.00000030	0.00000000		0.00000000	0.00000000	
	0.00,00000	0.00306,30	C.00863060				
	.06127271	00116955		.00058910	.01109616	00561047	<u></u>
	.03025157	00119273	.00145951	0.0030000	0.00003000	0.30300000	
	6.00300000	6.80003636	6.50005000				
	ATIONS AND CORRELATI SYD DEV .23823747E-02 .314.33973E-02 .79160992E-12 .21795999E+04 .19229649E+04 .11286068E+04		### ##################################	### ### ##############################	- 0.500.381 - 0.475.388	0.0504361	

	STC DEV		Y	7	VX ""	VY		
Z Z	.2179616AE+94	1.00000000			· · ·	sum sa a sa		<u> </u>
2	*1942047JE+04	96957913	1.00000000	4 00000100				
vž -	.11263456L+34 .94035850E+03	.94134161	•91334295 •14419837	1.00000000		· · · · · · · · · · · · · · · · · · ·		
Ϋ́Υ	.93922249E-53	.15486694	.25160Eb3	.14444351	1.00000000	4.00000000		
vz	.85885513E-03	.09087505	.07882844	.26566155	.18731137	1.00000000	1.00003000	
POSITI	ICM SUB-BLOCK							
E-VAL	(SCRT)	EIGENVECTORS	***					
	.307385E+04	.70522544	4657		· · · · · · · · · · · · · · · · · · ·	 		
	•307713E+03		.8553 .34838; 13694 .66975;					
	.411952E+03	.22945013663			•			
E-VALS	(SCRT)	EIGENVECTORS						
	.152626E-02		29324*****.439137		- 			
	.937761E-03		3412 6053/1		•			•
	-800745E-03	والمناف والمستورة والمراف والمستورة والمستورة والمستورة والمستورة والمستورة والمستورة والمستورة والمستورة والم	38262 .663840	123				
CONTRO		INELVER EXECUTION TI		DAYS				
	RSS VELOCITY							•
								·
	TATE PARAMET	ERS CATION COEFFICIENTS						
				2	vx		٧2	
TANCARC DE	VIATIONS AND CORRE			2	٧x	V	VZ	
TANCARC DE	VIATIONS AND CORRESTO DEV	CATION COEFFICIENTS X 1.303.60326		2	٧x	¥¥	VZ	
YANGARD DE	STC DEV .315575036.03 .356192676.33	1.303.40370 29385130	1.0000000		٧x	V	VZ	
YANGARE DE	STO DEV .31557503E-02 .3615267E+33 .45615016E+.3	1.303.40330 29385120 65385348	65845587	1.03003500		VY	vz	
YANGARU ÜE	**************************************	1.303.46326 65385120 65385120 65385048 84646615	65845587	1.03003400 .37275626	1.60000000		VZ	
YANGARE DE	STO DEV .31557503E-02 .3615267E+33 .45615016E+.3	1.303.40330 29385120 65385348	65845587	1.03003500	1.60000C00 -12272709	1.00000000		
YANGARG DE	**************************************	1.303.0370 29385120 59385120 59385120 69385120 69385120	65845587 05492783 -87731729	1.01003000 .37275626 23654325	1.60000000		1.00.03000	
YANGARG DE	**************************************	1.303.6376 29385130 29385130 65385048 84646615 04202065 7091.3371	6584587 05892783 .87731729 54636646	1.03003400 .3'275626 -23654325 .92893988	1.00000C00 .12272709 .56922409	1.00000000 2245.98u	1-00-03000	
YANGARD DE	**************************************	1.3034G37G 29385130 59385130 59385130 59385130 69385048 84646615 04232065 70913371	6584587 05492783 -87731729 54636646	1.03003600 .37275626 -23654325 .92893988	1.60000000 .12272709 .56922409	1.00000000 2245398u	1.00u03000	
YANGARG DE	**************************************	1.303.6376 29385130 29385130 65385048 84646615 04202065 7091.3371	6584587 05892783 .87731729 54636646	1.03003400 .3'275626 -23654325 .92893988	1.00000C00 .12272709 .56922409	1.00000000 2245.98u	1.00003000 .54502528 48763936	
YANGARD DE	**************************************	1.303uG3TG2938513G2938513G503850488464661504252065709133715658551507877195099457	6584587 06492783 54636646 42995652 35551112 33974259 .06685	1.03003000 .37275626 -23654325 .92893988 .65824744 -59218841 -59441937 -00111730	1.00000000 .12272709 .56922409 .282J1079 31774911 46541145 00034746	1.00000000 2245398u 47583666 03422046	1.00u03000	
ACCPFO CGNE CLGCK EPH Y	**************************************	1.303.c33629385120593851205938512059385120593851205938512059385120593851593851593851593851593851593851593851	65e4697 05e92783 731729 54636646 42995652 35551112 33972259 01642665 01694104	1.03003000 .37275626 -23654325 .92893988 -65824744 -59218841 -54441937 -00111736	1.0000000 .12272709 .56922409 .282J1079 31774911 46541145 0034746 50150170	1.00000000 2245398u 47583606 03422046 03573191 60125190 00165308	.54502558 42768516 42768516 60242845 00279120	
ACCPFO GGNE CLGCK EFH X EPH Z	**************************************	1.303.40330 29385120 29385120 65385120 65385120 653851 65787719 53495487 5009457 0001956 01506126	6584587 05692783 87731729 54636646 42995652 .35551112 .33972259 .01494104 02389564	1.03003000 .37275626 23654325 .92893988 65824744 59218841 54441937 00111730 01128483 03421142	1.60000C00 .12272709 .56922409 .28231079 31774911 46541145 40034746 50150170 .80437799	1.00000000 2245398u 375836060342204603573191012530800627778	1.00003000 .54502528 48768936 42530820 03242849 00279120 .01091725	
ACCPFO CGNE CLGCK EFH X EPH Y EPH Z EPH VX	**************************************	1.303.63762938512029385120593851205938512059385120593851205650655156787719533994875630945756309457563094560153660	6584587 05492783 87731729 54636646 42995652 35551112 33972259 0182665 01894104 02389553 0187923	1.03003000 .37275626 -23654325 .92893988 .65824744 -59218841 -59441937 -00111736 -01128483 .63021142 -00373589	1.00000000 .12272709 .56922409 .56922409 .31774911 6541145 0034746 00150170 .00437799	1.0000000 2245.98u 27581606 03422046 .03573191 .00125190 .00165308 00627778 .00178040	1.00u03cc0 .545025\\\ .545025\\\ -42630\\\ -42630\\\ -00272120 .010917\\\ -003823\\\ -003823\\\ -003823\\\ -003823\\\\ -003823\\\\ -003823\\\\	
ACCPFO CGNE CLCCK EFH X EPH Z EPH Z EPH V EFH VY	**************************************	1.303.c3362938513059385130593851305938513059385137156506551567877195534944756308457563084575630845756308457563084575630845756308457	6584597 05497733 574636646 42995652 35551112 33972259 016464 6238956 016494104 016494704	1.03003000 .37275626 -23654325 .92893988 -65824744 59218841 59441937 00111736 01128483 .43021142 00373589 00574405	1.60000000 .12272709 .56322409 .56322409 .31774911 6541145 0034746 50150170 .00437799 00478768	1.08000000 2245398u 27583606034722C460357319100165308106277780017804u00335159	1.00.03000 .54502528 -4278926 -42630820 -60242849 -00279120 -6191755 -00382358 -00560928	
ACCPFO CGNE CLGCK EFH X EPH Y EPH Z EPH VX	**************************************	1.303.63762938512029385120593851205938512059385120593851205650655156787719533994875630945756309457563094560153660	6584587 05492783 87731729 54636646 42995652 35551112 33972259 0182665 01894104 02389553 0187923	1.03003000 .37275626 -23654325 .92893988 .65824744 -59218841 -59441937 -00111736 -01128483 .63021142 -00373589	1.00000000 .12272709 .56922409 .56922409 .31774911 6541145 0034746 00150170 .00437799	1.0000000 2245.98u 27581606 03422046 .03573191 .00125190 .00165308 00627778 .00178040	1.00u03cc0 .545025\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
ACCPFO GGNE CLGCK EPH Y EPH Z EPH VZ EPH VZ EPH VZ EPH VZ	**************************************	1.303.033029385130593851305938513059385248646466150423202570913371553495487503695570103195800152536900687955	65e4667 05e92783 731729 54636646 42995652 .35551112 .33972259 .05236560 62383560 62383560 62383560 62383560	1.03003L00 .37275626 -23654325 .92893988 -65824744 59218841 5441937 0011736 01128483 .43021142 00373589 00374405 00373589	1.00000000 .12272709 .56922409 .282J1079 31774911 46541145 0034746 30150170 .00437799 00178768 00103529 00336794	1.00000000 2245398u 2245398u 07583606 034722046 .03573191 .00165308 00627778 .0017804u .0037835159 00946324	1.00u03CC0 .54502548 -42788916 -42630820 -60242869 -00279120 -01091755 -00382358 -00560528 -01754045	
ACCPFO GGNE CLGCK EFH X EPH V EPH VZ RS 1 LON 1	**************************************	1.303.403302938512029385120593851205938512059385120593851507877195949875000195601506126015356002536900687955	6584587 05492783 054931729 54636646 42995652 35551112 33972259 01242685 0124685 01235279 01235279	1.03003000 .37275626 -23654325 .92893988 .65824744 -59218841 -54441937 -0011128483 .64321142 -00373589 -01729082	1.00000000 .12272709 .56922409 .56922409 .31774911 6541145 0034746 50150179 00437799 00078768 00103529 .00336794	1.0000000 2245.98u 27583606 03422046 03573191 00165308 00627778 .0017804u .00355159 00946324	1.00.03cc0 .54502528 -48768936 -42630820 -6024289 -00279120 -01091755 -00382358 -00560928 -01754045	
ACCPFO GGNE CLGCK EFH X EPH Y EPH V EPH VZ RS 1 LON 1 Z-HT 1	**************************************		6584587 05492783 54636646 42995652 35551112 33972259 0182665 0183404 02383551 01454704 01235279	1.03003L00 -3'27'5626 -23654325 -92893988 -65824744 -59210841 -54441937 -00111736 -01128483 -43021142 -0037'3589 -01729082 -01729082	1.00000000 .12272709 .56922409 .56922409 .28231679 31774911 66541145 0034746 00150170 .00477799 .00103529 .003629689 .00353209 00629689 .00353209	1.0000000 2245398u 2245398u 234220460342204601251900165308006277780017804u0033515900946324 .00210294006810400597934	1.00u03cc0 .54502558427689364253082000279120 .010917550038235800560528 .0175-045	
ACCPFO CGNE CLGCK EPH Y EPH Y EPH VZ RS 1 LON 1 Z-HT 1 RS 2	**************************************	1.303.c3302938513059385130593851305938513059385130593851371565065515078771950909457000195801506126001535600152536900687955015232070653550	6584587 05497733 574636646 42995652 35551112 33972259 0124665 0124560 01235279 01235279 01235279 01235279 01235279	1.03003000 .3275626 -23654325 .92893988 -65824744 -59218841 -59441937 -00111736 -01128483 .43021142 -00377589 -00377589 -01729082	1.00000000 .12272709 .56322409 .28231079 -31774911 -46541145 -50150170 .0437799 -08078768 -00103529 .00336794 -50629689 .0053209 -50817046 -50953868	1.00000000 2245398u 2245398u 03422046 .03422046 .0125190 .001653080062778 .0017804u .00210294005810400597534 .00326377	1.00.03CC0 .54502528427832564263082000279120 .010917550038235800560528 .01754045	
ACCPFO CGNE CLGCK EPH Y EPH Y EPH VY EPH VZ RS 1 LON 1 RS 2 LON 2	**************************************	1.303C33C293851205938512059385120593851205938504854252025709133715678771953495487500054570005457015061260153560022536900687955023415756555280119290401929040192904	65e4567 05e92783 731729 54636646 42995652 .35551112 .33972259 .0624565 .06279293 .00454704 01235279 01235279 01235279	1.01003u00 .3727562623654325 .92893988 .6582474459218841544419370011173601128483 .434211420037358901729082 .03407977008073781:97558301875489014571349	1.0000000 .12272709 .56922409 .56922409 .28231079 .33774911 .46541145 .50150170 .00437799 .00437799 .00336794 .00336794 .00529689 .00353209 .00353209 .00533668 .00462209	1.00000000 2245.98u 07583606 03422046 .03573191 .00125199 .0017804u .00378344 .00210294 00568104 .00326377 .00326377	1.00u03cc0 .545025284276352642630820602426900279120 .610917550038235800560528 .01754045 .00224545 .5139736300567213 .01164625	
ACCPFO GGNE CLGCK EFH Y EPH VX EFH VY EPH VZ RS 1 LON 1 Z-HT 1 RS 2 LON 2 RS 3	**************************************	1.303.c33029385130593851305938513059385130593851305938513715638537156387877195638945756389457563894575638945756389457563894575638945756389457563894575638945756389457563894575638955	6584587 05492783 54636646 42995652 35551112 357259 0182665 018350 01835279 01835279 01835279 01835279 01835279	1.03003000 37275626 -23654325 -23654325 -92893988 -65824744 -59218847 -03111730 -031128483 -03121483 -03121483 -031729082 -03778 -01729082 -11975583 -11975583 -11975583 -11975583 -11975749 -01457134 -01457134	1.00000000 .12272709 .56922409 .56922409 .28231679 -31774911 -26541145 -20150170 .0037779 .00170768 -00103529 .0036794 -00629689 .00353209 -00629689 .00462209 .00462209 .00462209 .00493688	1.00000000 2245398u 2245398u 03422046 .03422046 .0125190 .001653080062778 .0017804u .00210294005810400597534 .00326377	1.00.03cc0 .545025284876892642630820602428900279120 .010917550038235800560928 .01754045 .00224545 .31397263 .0241001800597213 .01164625	
ACCPFO CGONE CLGCK EFH Y EPH Y EPH Y EPH YZ RS 1 LON 1 Z-HT 1 RS 2 LON 2 Z-HT 2	**************************************	1.303.40330293851202938512059385120593851205938512059385150787719534954875005455015356001535600253457006879550233415706555559	65845870549278305492783546366464299565235551112339722590184504023527901235279012352790123527901235279	1.03003L00 .37275626 -23654325 .92893988 .65824744 -59218841 -54441937 -03111736 -0312142 -0373589 -03729062 .03707977 -00807378 -11975583 .1875489 -03457134 -11267245	1.00000000 .12272709 .56922409 .56922409 .28231079 .31774911 .06541145 .00034746 .00150170 .00437799 .00437799 .00336794 .00529689 .00353209 .0053668 .0062209 .00459764	1.0000000 2245.98u 2245.98u 2245.98u 0357.3191 .60125190 .001653080627778 .0017804u .0035515900946324 .0021029410.6810403597934 .00326377003687978	1.00u03cc0 .545025284276352642630820602426900279120 .610917550038235800560528 .01754045 .00224545 .5139736300567213 .01164625	

(day)	SID DEV	ACCPFO EFH VX	CONE	GLOCK EPH VZ	EPH X	EPH Y	EPH Z	
			2711	2, 1, 72				
ACCPFO	.54492807E-02	1.00000000		*				
CONE	-1351873JE-01	91387515	1.00000000					
CLOCK	.175.7195L-01	98704162	.90285097	1.00.00000				
EPH X	.2241503JE+,4	00369706	.00050529	.00021694	1.00000000			
EPH Y	.19751446E+0'	CO222515 . OCE4:812	.00207905	.00188894	.90004854	1.00000000		
Lrn c	.12370>46E+u	*****************	00579842	00483992	.83087376	.75000717	1.00000000	
EPH VX	-99309687E-03	CO213510 1.00000000	.00101508	.00141889	.31171967	.10998727	.10310515	
EPH VY	.99237176E-03	00351522	.00016329	00052618	.08510138	.31101353	.06970161	
		.03387457	1.000000000					
EPH VZ	.9796238 <i>E</i> E-03	.00514543 .02733241	00388166 00151559	1.00186883	.03561637	.03067114	.39801325	
								
PS 1		.04170995	.00042472	.06143224	.00251572	>0296563	00143775	
		CJ025744 *		.029551				
LON 1		.00266921	00260210	60246391	.00067059	.00198088	00819548	
	<u> </u>	0000318E	CC0J0924°	C-027163				
Z-HT 1		00221248	.00487581		00343355	.02111448	04757830	
20.5		03050393	.00065470	.00070214	00030637	- 00257805	874 747	
as 2		C3096018 - 0EGG9413	00047767 00003545	00384216 00018136	.00079033	00257298	.00444212	······································
LON 2		.00196369	00237912	00244853	.00010891	.0u186U70	00568132	
E		.03063597	00237312	·00244053	100010037			
Z-HT Z	· · · · · · · · · · · · · · · · · · ·	03773520	00527352	- CC182901 -	.003431E6	C2108967		
		.00458798	00364612	600 82026				
PS 3		0.00000030	0.0000000	0.00000000	0.00300000	6.00000000	8.00000Cu0	
* · · · · · · · · · · · · · · · · · · ·	المنظمينية المساوية المساوية المارة المواطنية المارة المارة المارة المارة المارة المارة المارة المارة المارة ا المارة المارة	0.00000000		- 0.00000000	garante de la companya de la company			
LCN 3		.00220259	00235953	00232553	.00036923	. 40181973	00657382	
		.00001194	00013869	.00021026				- 4
Z-HY Z		0.36000000	0.0000000	0.00600200	0.00000000	0.00000000	. 02003020 .	********
* ▼ - *_		0.0000000	0.0000000	0.00000000				
S/C UNC	ERTAINTY RELATIVE TO	EPHENERIS BOLY					,	
TANGARD DEV	TATIONS AND CORRELATI	ON COEFFICIENTS						
	STO DEV	×	Y	,	٧x	٧٧	٧Z	
************	and the second	-	حج و فود ريد ري ست					
	.22637172E+54	1.00000000						
¥					•			en jihane
, , , , , , , , , , , , , , , , , , ,	.Z0630628E+34 """	.8718/527	1.00500000	•				
* * * * * * * * * * * * * * * * * * *	.20630028E+34 ****	.8718/5E7 .80972413	1.0C000000 .6E750L72	1.00000000				
٧×				1.00000000 .15631582	1.00000000			
VX VX	.13454626E+34 .17583795E-92 .13767252E-92	.80972413 .27206403 .06409793	.66750172 .04766663 .32755827	01661964	.08420053	1.00000000		
٧×	.13454626E+34 .17563795E-02	.80972413 .27206403	.66750172 .04766663	. 15831582		1.00000000	1.00000000	
V.	.13454626E+34 .17583795E-92 .13767252E-92 .13431864E-02	.80972413 .27206403 .06409793	.66750172 .04766663 .32755827	01661964	.08420053		1.00000000	
VX VV VZ POSITIO	.13J54626E+34 .17583795E-92 .13787252E-92 .13431864E-02	.80972413 .27206403 .06409793 .04561019	.66750172 .04766663 .32755827	01661964	.08420053		1.00000000	
VX VV VZ POSITIO	.13J54626E+34 .17583795E-92 .13787252E-92 .13431864E-02	.80972413 .27206403 .06409793	.66750172 .04766663 .32755827	01661964	.08420053		1.00000000	
VX VV VZ POSITIO	.13454626E+34 .17583795E-92 .13777252E-92 .13431864E-02 DN SUB-BLOCK (SCRT) EIGH	.80972413 .2726403 .06409793 .09961019	.66750172 .04766653 .32755827 04199385	.15831582 01661964 .48971069	.08420053		1.00000000	
VX VV VZ POSITIO	.13454626E+34 .17583795E-92 .13777252E-92 .13431864E-02 DN SUB-BLOCK (SCRT) EIGH	.80972413 .2726403 .06409793 .09961019	.66750172 .04766653 .32755827 04199385	.15831582 01661964 .48971069	.08420053		1.00000000	
VX VV VZ POSITIO	.13454626E934 .17583795E-02 .13787252E-02 .13431864E-02	.80972413 .2726403 .06409793 .09961019	.66750172 .04766653 .32755827 04199385	.15831582 01661964 .48971069	.08420053		1.00000000	
POSITIO	.13454626E+34 .17583795E-92 .13777252E-92 .13431864E-02 DN SUB-BLOCK (SCRT) EIGH	.80972413 .272C403 .06409753 .09561019 ENVECTORS .71271927 .6078 .65417167 .4038 .250328266854	.66750172 .04766653 .32755827 04199385	. 15831582 01661964 . 48971069	.08420053		1.00000000	
POSITIO	.13J54626E+34 .17583795E-92 .13787252E-92 .13431864E-02 DA SUB-ELOCK (SCRT) EIG! .310799E+04 .595747E+03 .513830E+03	.80972413 .2720403 .06409793 .09561019 ENVECTORS .71271927 .6078 .65417167 .4038 .250328266854	.66750172 .0476663 .32755827 04199385 1314 '.3480919 2693 .6414029	. 15831582 01661964 - 48971069	.08420053		1.00000000	
POSITIO	.13J54626E+34 .17583795E-92 .13787252E-92 .13431864E-02 DA SUB-ELOCK (SCRT) EIG! .310799E+04 .595747E+03 .513830E+03	.80972413 .2720403 .06409793 .09561019 ENVECTORS .71271927 .6078 .65417167 .4038 .250328266854	.66750172 .0476663 .32755827 04199385 1314 '.3480919 2693 .6414029	. 15831582 01661964 - 48971069	.08420053		1.00000000	
POSITIO	.13454626E-04 .17563795E-02 .13787252E-02 .13787252E-02 .13431864E-02 DN SUB-BLOCK TSGRT) EIGH .310799E-04 .595747E-03 .511830E-03 TSGRT) EIGH	.80972413 .272C403 .06409753 .09561019 .09561019 .71271927 .6078 .65417167 .4038 .250328266854 ENVECTORS	.66750172 .0476663 .32755827 04199385 1314 '.3480919 2693 .6414029	. 15831582 - 01661964 . 48971069	.08420053		1.0000000	

				.1863E+01 P			.9483E-02 .9994E-03	.2857E-01	.3077E-u1	.2187E+04	.1962E+44	.1206E+04	
565.0000			V=	.1863E+01 P	H/S S	SOLVE-FOR	.9 183E-02 . 1994E-u3	.2857E-01 .9994E-03	.3077E-01	.2187E+04	-1962E+Q+'	-126oE+04	·
			V=	.4873E+01 1	M/S S	SOLVE-FOR	.1:49E-01 .1994E-u3 .3569E+02	.2869c-01	.3080E-01	.21872+04	-1962E+u4	.1268E+C4	
565.0000	REFCRE ME			.4873E+01 .4571E+03			-1994E-03	.9994E-ù3	.3080E-01 .9985E-03		.1962E+04	-12c6E+34	· · · · · · · · · · · · · · · · · · ·
565.0000	AFTEP H=	200Z =	ρ≖	.4571E+D3 k	кн	STATE"	.9934±-03 .5533E+02	.3994E-u3 .2216E+03	.9905E-03	-1131E-0Z		-40985-32	
565.5000	EEFCPE - K=	2012.	ρ± '''' V=	.4850E+53 h .4691E+61 }	KH	STATE	TT.9071E+02'	". 22/4L+(3 ."	-4032E+03 -	.1113L-02	- 2455E-02 -1964E+04		
							.50716+62 .1947E-01 .19946-03	95948-03	.9985F-D3				
	رسيسة ومستجور بوريو شواق			.5167E+01 H			- 4994 = - 1.3	F.0 - 1400P	-3+25E-01 -9985E-03	•			
565.0000	BEFCPE H	1212-	F=	.4702E+03)	кн	STATE	29-13998. - 20-138893.	. 3593E-03 . 2317E+03	.9985L-03 T.4117E+33	.1265E-72"	.2573E-02	~~316E ~CZ	
564.5000	AFTEF H=			.2636E+03 } .5005E+01 }			4123E+02	-1351E+53	.9995E-03 12460E+33 .3425E-01				
564.5000	EEFCRE #=	4123	P= ".	.2864E+03 .50/2L+01	KM TO	STATE SGLVE-FOR		.3331E-61	. 3426E-01	- 3036E-32 - - 2207E+04	.2457E-EZ	-1359£+04	
			V= .	.5072c+01 t	M/S S	SOLVE-F.R	.2317E-01 .2949L-63	.3331E-01	.3426E-01	.7207c+04	.2016E+U4	-1359E+34	
564.5000	ACTED - V-			.5211E+01 N			.2399E-01 .3999E-03	.9948E-03	.3465E-01 .9995E-03		.2016E+3+	.13552+14	
564.5000"	EEFCRE H=	1212	p=	.2913E+63 k	KH	STAIE	.9998E-03 20+30E90-	.9998E-03	.9996E+03 2493E+03	.13492-32	25425-12-	4345E-C2"	
564.5050 /	AFTER H=	4123	ب - ۷=	.1733E+03 H	KH H/S S	STATE SOLVE-FOR	.643CE. *02	. 1734[+62	.1411E+03 .3469E=01		.24UCE-L2	.4303E-02 '	
564.0000	EEFCPE "M=			.1734E+03 k .5093E+01 P			.6441E+02 .2J99E-01	.347/E-01	.1412E+03 .3465E-01 .9999E-03	.1231E-J2 " .2261E+04	.2468E-02."" .2146E+04	-157cE+64	
				.509.E+01 #			-1000E-02	.1000E-02	.3465E-J1 .9959L-83				
564.0000	AFTE'# H=	2121	P=	.1734E+03 k	кн	STATE		-1000E-02	.999E-03			.4315E-02 ***	-
564.0000	PEFCRE "H=	Z1Z1	F=	.3266E+04 k	KM	STATE	.100CE-02 .6014E+03 .2099E-01	-1553E+04	.9999E-03 .2810E+34 .3465E-01		.2451E-32 .2459E+04		IALIT
564.0030	AFTEP M=			.326EE+04 H .5151E+01 N			-6014E+03	.1553E+04 .3477E+01	.2813E+04 .3465E-01	.138CE-02	.2451E-C2 .2499E+84	.4315E-02 7	
			V= .	.5292E+01 +	Y/S S	SOLVE-FOR	.2099E-01	.3+79E-01 .	.3465E-01	.2836E+04	.2843=+84	.2842E+8+	بر ب
"566:3656"":	peerpe u -			.5292E+01 M					.9949E-03	.2830E+84	.2843E+04		POOR
564.0000	AFTEP H=	1212	P≖	.5415E+04 H	KH	STATE	.1000E-02 .72JbE+03	.100ut-u2	.9999E-03 .3634E+J4	.1827E-02	.245182-		
564.0000	EEFCRE M	1212	P= V=	.5539E+04 1	KH	STATE-	.71962-32 .7196E+33	~4106E+04 ~~	-3640E+04 "	.5038E-02 .2871E+04	2531E-02		<u>Ş</u>
563.5000	AFTER H=			.5532E+04 .7099E+01		STATE SOLVE-FOR	.7345E+03	.350CE-01	.3641E+04 .3499E-01 .1300E-02	.4994E-JZ	.2399E-12 - .2886c+04		
				.7163E+01 P				.350.E-01 .10J0F-02			.3000E+34	.30036+34	
563.5000	EEFCRE ME	4123	Pz	.1400E+05 H	ки	STATE			.100CL-02	.4994E-02	-25575-02	-4453E-CZ	
563.5000	AFTEP H=			.1403E+05 .7163E+01			-1000E-02 -1049E+04 -2198E-01	-9974L+04	.9632E+04	.4994E-02	~.2557c2 .300Cc+04	**44531-02	
			V=	.8711E+01	P/S :	SOLVE-FOR			.350uE-01 .130Ct-02		.30406+04	.3500E+64	

565.0000	AFTER	H=4123	P=	.15#E##3	KH	STATE	.3569L-02	7508E+C2	.1348E+03	.5913E-03	8788E-C3-	-1526F-C2	·	
			V=	-1058L+01	L M/S	SOLVE-FOR	.94821-02			.2175E+04	.1931E+04			
	<u> </u>		1				.997: E-u3	.9983E-03						
565.5000	BEFCRE	M=1212					.5169L+u2		.1770E+33		12135-02	.16015-02		
			V=	.2184E+01	L M/S	SCLVE-FOR	.94621-02	.2857E-01	-3077E-J1	-2178E+04	•1935E•J•	.121vE+34		
A ESE ERGR	SETEE	W-4345		25665.67	· VM	STATE	.9981E-03	.99846-03 .10366+03			93912-23			_
303.3000	MITER	M-TSTE	V-		MAC	SOLVE-FOR	93341-02	.2150E-01	.3049E-01		.1935E+04	•1210E+84		
•							CGRIF-DT	. 99846 - D 3			* 1 332F 4 04	*15105.404		
565.5000	PEFCPF	H=4123	p= -	-1206 FF+03	KH"	STATE	3756E . 02	T. 1086/ +03			9391E-23	-1555E-C2		_
			V=	.1941c+01	F/S	SOLVE-FOR	•9334f -02	.2198E-01	-3049E-01			.12162+04		
							.998:E-03							
565.5000	AFTER	M=4123	₽=	-2661E+03	KH :	STATE	.3754E 2				.9337E-03	.1585E-32 "		- ·
	Addition of		V=	-1930E+01	H/S	SOLVE-FOR	-9329E-02	.2198c-01	.3049E-01	-2169E+84		.1181E+\$4		
							.995€∠-03					•		
566.0000	"EEFCRE	H=1212				STATE	-5684E+02				~~1276E+3Z~			
			V=	.2265E+01	LMZS	SOLVE-FOR	.9329t-02	.21956-01			.1919E+04	+1185E+04		
			. :			4.5	• 995 CE-U3							
566.0000	AFTER	"H=1212					4652E+02				~~.1014E-C2~		_	-
			V=	-2049E+01	F/S	SOL VE-FOR	.9204E-02		-3615E-01		.1919E+04	-1185E+04	7	•
EEE 3888	BEEFER			77155.03		STATE	.9959E-03				***.1014E-32			_
36000000	CCPURE	W=5005				SOLVE-FOR	.4652E+J2	.133/E+U3				•1602E+62	à.	
			, —	34 U 7 7 C T U A		JULIC-FUR	.9204E-02				• 47436 404	*77:35464		
566.6030	AFTER	H=2002	F=	.2692£+03	KM	STATE		-1327£+.3			9702E-13	16031-02		-
	- 1	. 7117				SOLVE-FOR	.6775E-02		. c103E-u1	.2174E+04		.1185t 904		
	5 T 5 T 12						.9959c-03							
566.0000	" BEFCPE	H=2121	P.=_	-2692E+03	KM	STATE	-46C0L+02	.1327E+13	.2297E+03	.5431E-03	.97022-03		······································	
			V=	-1951E+01	L F/S	SCLVE-FOR	.67754-02	.1654E-01			.1919L+04	。以285E+ 84		
		and the latest series				•	.9959E-03							_
5E6.0000	FFTER	M=2121				STATE		.7177L+0Z	.124UE+03		.5135E-C3			-
			٧=	*10+3E+01	PIS	SOLVE-FOR	.6367E-02	.1>83E-01			.1919E+04	.1185E+64		
566 mmm		W-6127	- 0-	11.725103		STATE	.3368E+02	. 3968L-03	+44215+02	75055-07"	* #4755	E071	4 	
. 250,000	CELCHE	11-7163	U±	10636+01	M/S	SOLVE-FOR	.6307E-02	-1583c-01	.2071E-01	.2174E+04		.1185£+64		
•						50212 101	• 99991-03				********	•11036104		
- 566.0000	AFTER	M=4123	P=	" .1471E+53	KN-	STATE	.3368E+12	*7172E+42	.1239E+J3			8575E-03		_
			V =	-1061E+01	M/S	SOLVE-FOR	.6306E-42				.19462+04	.1159c+04		
							.99211-03	.9941c-03	.9883E-03					
566.5000	PEFCRE	= N=1212					:4263E+32				9766E-53			-
			, . V≍	.1462E+01	HZS	SOLVE-FOR	.630£E-02			.2172E+04	-1911E+C4	.116>E 04		
			West 200				.9925 = -03	.9943=-03	.9882E-C3					_
200.2101	AFIEK -	H=1212	P=	11/2/2003	KM -	SOLVE-FOR	.3710E+J2 - .5452E-02							
			Ϋ́	**TCUE+UI	F/3	SOFACELOR	•94525-03		.1751F-31 .9882E-03		.1911E+0+	.1165E+34		~ ~
566.5000	FFFCFF	W=4123	~~ p=~		KN "	- STATE	371CE+12	**************************************	14541 403		- 554 1E-23	-9114E-03		- 20
20077000		,,-,,,,	V=	-1138E+01	HZS	SOLVE-FOR	.5452E-02		.1751E-u1		.1911E+04	.116>E+04		~ ~ 20
							. CG 25 -113	991.36-03	038203					ਰਿਖ
- 566 -5000°	"AFTER"	~ H=4123	P=	.17192+83	KH	STATE "	37084.92	.84891+62	-1448E+03	.3951E=33	5523E-C3	9085E-C3		ORIGINAI OF POOR
			V =	.1134E+01	L H/S	SOLVE-FOR	.5444£ ·02	.1352E-01	-1751E-01	.2166E+04	.1901E+04	.1146E+84		02
	13.11						.9873:-03	. 49u6t-u3	-9815F-03					$z \geq$
567.0300	EEFCPE	H=1515.	P≖	2105E+03	KM "	STATE	49275 + 12						*****	- 2 1
			V=	.1519E+01	L M/S	SCLVC-FOR	.5443E-02				-1907c+64	.1152E+34		22
	سد زبو موجع و الده				2 22.00		.9878ru3 .43612+12	.99JdE-63	.9814E-03					- 2 %
391.0000	BL 1FK	n=1212	P =	12055101	L NO.	SOLVE-FOR	.43616+42 .4777E-02		.1723F+u3 .1504F-J1			-9582E~73		NATE IS
			V =	*15056401	. 07.3	- GOLVETTON	-4777E-UZ		.1504E-J1 .9814E-D3		.1907E+0-	.115cE+84		
567-0000	PEFFF	M35005	P=	-2051F#63	KH-	STATE-		1524E+03			.5935E-LJ	-958ZE-03		- i-j - i-i
						SOLVE-FOR	.4777E-02	.1146E-01		.2172E+04		.115¿E+04		15 22
					•		.98781 - 03	-9908E-03	.9814F-03					- 00
567.00C0-	AFTEP -	F=2002	p=-	2048E+63	KH "	STATE-	-4.356E+1/2	-1022 + 03	*.1720E+03 ***	-4138E-93		-9422E-03		_ *
			٧×	-1183E+01	L P/S	SOLVE-FOR	.4537L-32	.1145E-01	-1415E-01	.2172E+04	-1907E+04	.11522+04	•	
				1977 1 1 1 1 1 1 1 1			.9878L-03	.9906E-83	.9814c-03	*****				
567.0000	PEFCRE	H=SISI						-1022E+73				.942ZE-03		_
			V=	-1183E+01	HZS	SCLVE-FOR	.4537E+02		.1415E-01		-1907E+04	.1154E+34		
							.98781-03	.9414E-03	.98142-03					
								·						

567.0000	AFTER"	" H=2121"	P# .	".1377E+03	KH :	STATE	-3407£+t 2	.6811E+UŽ	-1147E+13			60945-63	
			V=	.7812E+00	H/S	SOLVE-FOR	.4182E-02	1382E-01	-1368L-01	-2172F+84	.1907E+04	.1152E+04	
						* ***			.9813L-03		4110.2.04	**********	
567.0000	BEFCRE	H=4123	PE	-1377E+03	KH	STATE			-11472+63	-3178E-03	-3713F-E3-	-6094E-03	
			V =	.7812E+00	H/S	SCLVE-FOR	-4185E-02	.1082E-01	.1368E-01	.2172E+3+		.115.E+04	
							.987ef - 63				*********	111722444	
567.0000	AFTER-	M=4123	P=	1.1376E+63	KM	STATE	.34J7E+L2	.6807E+C2	.1146E+03		~~ 37186 = 53 ~	cese-ca	
	•			.7801E+00			.4184E-02	.1 G81E-01			.1899E+0.		
							CAUCL-LZ	94505-01	07755-07				
567.5000	DEFCRE	- H=1712	P=	1574F+R3	KM	CTATE -	-4809E+62	*: 7723CA02	* 100EEA07	- nec 1101 - 47 -		14 1446 - 43	
	50, 51,2		v=	.9867E+C0	MIS	501 05-506	.4184E-02	.1381E-01	1368=01				
					1.73	. JULYE - FUR					·1905E+04	.11+3E+04	
567 ERRR	ACTED	H-1212		1270-107			.5815: -03	.9861t-63	.9724E-03				
267.5000	PFICK	11-1515	F-	*1935E+U3	BH.	STAIL	.3765E+L2 .3796E-02	*7764E+32	•1276E+G3	3310E-33	~~. 3652E-03~	**5857E-03 ***	
			V.=	*1622F+00	H/2	SOLAF-LON	.3798E-02	-9888E-02	.1224E-01	.2173E+04	-1905E+04	.1143E+G4	
							.98151-03	.9861c-03	.9724E-03			•	
567.5300	RELCHE	M=4123	P±	•1530E+03	KH _	- STATE	3765E+(2	77704E+02	•1276E+33 ***	3310E-03	3652E-13-	55572-03	
			V=	•7655E+80	H/S	SGLVE-FCF	.3798E-02	.908BE-u2		.2173E+84	.1905E+04	.1143=+84	
		1 1	100					- 98o1f -03					
567.50:3	AFTER	H=4123				STATE	.3763E+CZ	.7695L+32	.1275L+U3	.3308E-33 -	3643c-03	58435-33	
			V=.	.7639E+00	H/S	SCLVE-FOR	.3797E-02	.988-E-02	.1224E-81	.21682+04	.1599E+04	-1130F+04	
	4 4		•				-9730F+03	- 9796F-1.3	96456-03		· • •		
566.0000	BELCAE	#=1212"	p=	771757E+03	KH	STATE	51 82E+02	.8725L+02	.1434E+03		3398E-C3	5699E-03	
			V= .	.9156E+00	H/S	SCLVE-FOR	.3797E-02	9884E-02			.1906E+84		•
							.07366-63	08 145 - 07			127002-84	*******	
568.00C0 "	AFTER	H=1212	P= -	.1767E+83	KH	STATE"	***4158E+02	.8662E+C2			33026-07		
			V=	.7684E+30	¥/5	SCI UF-ECO	.3663E-02	.9288E-uz			.19u6E+84		
					.,,	50E FE - 1 On			.9614E-03		* 73005 484	. 11:05 +84	
568.0000	TEECRE	H=21137	~~ <u>~</u>	17075403	VH	STATE-		.8662E+02					
2001000	L. 0										3392E-63		
			, -	.7084E+00	4/2	20FAE-LOW	.36636-02	9288£-J2			.1906E+04	.1138E+84	
568.0000	RETER	M-2015	0-	.161ZE+03		STATE		.98:1E-U3					
20010020	AF I ER	N-2002		.6327E+00	KII	STATE		.8108E+02				-4547E-03	
			V-	303516400	H/2	ZOCAS-LON:		.3436E-02		.2175E+04	.1900E+04	.1138E+04	
	accene	W-2121	_						.9014E-C3				
200.0000	HELCHE	U=5151	P=	.1+12+43	KM	STATE		.81J8E+L2				-,4547E-03	
			V=	.6327E+00	M/S	SCLVE-FOR	.2569E-02			.2175E+04	.1906E+04	.1135E+34	
*********		W-2424						.9801E-03					
200.0000	Prick	F=2121				STATE		.6405E+02				33535-53	
			V =	.4979E+00	HVZ	SCLVE-FOR	.2546E-02			.2175E+ù+	.190o£+J4	.1138E+C4	
~~~							.9736t-03	•9801c-03	.9612E-C3				
260.0000	eer Che	M=4123	P=	•1282E+03	KM.	STATE		16405E+02	"1053E+33	.3053E-03	-1.5043E-C3	_:33585-63	
			V=	.4979E+00	H/S	SOLVE-FOR	.2546L-02	•3412E-02	.8495E-02	.2175E+84	.1906E+84	-1138E+04	
		garage (Salah)					•973E2-03	.98uit-03	.9612E-C3				
568.0503	AFTER	~M=4123~	- P≠-	二。エミとはだりひき、	KH -	STATE-	3547E+J2 -	-6404E+C2	.1C53E+03	".3052E-03""	209 JE-13	3325E-C3	
			V=	-4974E+00	M/S	SCLVE-FOR	.2546E-02	.3412E-02	. £494E-02	.2169E+44	.1901E+04	1127F+84	
		*						のフツにごニハマ	C/ 902-07			•	
568.5500	PEFCRE	"H=1212"	ř'= "	.1398E+03	KH "	STATE	484CL+02	16874E+72	1117F+33	*.5262F-03	-2320F-T3-		
			<b>V</b> = .	.7577E+CC	H/S	SOLVE-FOR	.25465-02	.3412E-02	.84946-02	-2177++04	•1909E+u4		
			4. É	7.7	·			9728t-03			*******	411435184	
568.5000	AFTER	"H= [212	P=	.1362F+03	KH	STATE	.3747E+02		-1116E+L3	3246E-03			
			V=	.5115E+00	HZS	SCI VE-END	.2538L-U2				".Z143E-E3"	• 3352E-E3	
							66446.03	07.105			.1909E+u4		
SER SHEAT	PFFCDF	一月 エムイフマー	- p =	13695287	VH	- PTATE-			-9478E-03				
20002000	arr the	123	V-	61155401	N/C	SULUE COD	.2538E+02	**************************************	-1116E+03	•3215E - 33 """	- 2143E-C3	-3352E-03	
			•-	• > T T > C V U U	17.3	JOE AE - LOK	. CD30E=02	• 3 3 1 4 t = 1 2	.8462E-02	.2177E+04	•1909£ •04	-1135E+84	
202.2000	AFICH	n=4123	r=	• 1 302E • 04	KM.	STATE	374EE+02	. 6858E+C2	-1115E+03	-3214E-33 -	-2139E-03	33-7E-53	
			V=	.5110E+00	F/S	SULVE-FOR	. 2538L-J2	-3319E-02	.8462E-ű<	.2171E+04	·1905=+=4	.11c5E+84	
مستعد مرسود فينب		خود معملان برونوست					.5524E-03	.9037E-03	.9325E-03				
569.00W0	BEFCRE	M=1212				STATE	-5126E+02	-7421E+32" ""	-1193E+33 T	6395103	-Z403E-03	-3655E-23	
			A =	.7748E+00	HZS	SCLVE-FOR	.2538E-02	.3314E-J2	.84621-02	.218-E+64	+1914E+04	.1135c+84	
	1000				*		.9532E-0 <b>3</b>		.9324E-U3				
	AFTER	M=1515				STATE	-4025E+02		-1192E+03	-3346=-33	+2229E+13	-3827F-83	
269-0000			V=	-5283E+00	H/S	SCLVE-FOR	.25378-02	.3315E-02			.1914E+84	.1135E+84	
>69.0000							.9532E-03	.9640E-03	-9324E-D3				
269-0060													
	EEFCRÈ	M=2002	- p=	-1460E+03	KH	STATE		.7414F +82	-1192F+6T	-33LSF3			
	eef Cre	M=2002		.1460E+03				.7414E+02	-1192E+G3	-3346E-33	.2229E-03	-3427E-03	

~569.00C0	AFTER	n=2002	_b=_	-1457E # 03	KH	STATE		-7414E+02	.1191E+03	.2347E-03	-55536-13	-34072-63	
			V=	.470.E .00	H/S	SULVE-FOR	.2524E-02	.3315E-02	.8413E-02	.2180E+04	.1914E+04	.1135L+84	
							.0532F+03	.964BF-03	.9324E-03				
569.0000	BEFCPE	H=2121	P=	-1457E+03	KH	STATE	.39376+12	.74142+62	•1191c+63	.23471 - 33	. 2229E3	-34372-03	
			V=	.4700E+00	M/S	SOLVE-FOR	.2524E-JZ	.315E-02	.8413E-02	.218uc+64	.1914E+04	.1135E+04	
tay salah ili	and the second	•					.9532E-03	.964CE-03	.9324E-03				
~569.0000	FFTER	K=5151	- P=-	-1215E+03	KH.	STATE	.34702+02	761515+52	.9891E+02	-2178E-03	16385-13	- 5225E-53.	
			V=	.3809E+00	HZS	SCLVE-FOR	.2516E-02	.3296E-02	.8412E-02	.2180E+04	.1914E+84	.1134E+04	
			1.5	100			.9532E-03	.9640E-03	.9321E-03				
569.0000	CEFCRE	H=4123	P=	.1215E+03	KH	STATE	.3470E+02	-6151E+02	-9891E+32	.21/8E-33	.1688E-43	.2633, C3	
			V=	.3609E+0C	M/S	SOLVE-FOR	.4516E-0Z	.3296E-02	. 8412E-02	*2183E+04	•1914E+04	.1134E+04	
							.9532E-03	.964 CE-03	.9321E-03				
569.0000	AFTER	H=4123	- P=	-1215E+03	KH :	STATE	.3469E+82	.6150E+02	-988-JE+02	.2178E-03	.16862-13	.26c/E-C3	
			V =	.3806E+00	HZS	SOLVE-FOR	-25151-02	•3:96E-02	.8412E-02	.2174E+04	.1910E+U4	.1125E+64	
							•9401E-03	.9535E-03	.9148E-03				
569.5000	TEEFCRE	H=1212	p=	.1304E+03	KH	STATE	.4574E+02	• 65 3 2E + 5 2	.1623c+E3	.599863	-2029E-03	.34/25-63	
			. V =	.7038c+00	H/S	SOLVE-FOR	.25151-02	.3296E~02	.8412E-02	.2183E+U4	.19196+04	.11352+84	
			14, 1	1.1.1.1.1.1.1			.9410E-03	.95.96-03	9146E-03				
569.5000	AFTER	H=1212	₽≑	.1275E+03	KM.	STATE	.3716E+uZ	.6486E+32	.1032E+03	.3207E-03	-1/96E-13	.28.1E-63	
			V.=	.4663E+00	HVS	SOLVE-FOR	.250402	.3295E-02	.83/3E-02	.2183E+U4	. 1919E+04	.1135E+84	
	<u> </u>						.941;c-03	95398-03	.9146c-03				
569.5000	EEFCRE	H=4123	F=	.1275E+03	KH	STATE	.3716E+02	.6480E+92	•1032L+J3	• 3267E-03	.1/96=-[3	.28.1E-03	•
			` V=	-4063E+00	H/S	SOLVE-FOR	.2504E-02	-3295E-02	.8373E-02	.2183E+04	•1919E•04	*1135F+04	
					14.1.2		.941JE-03	9539E-03	.9146E-03				
569.5010	AFTER	H=4123	P≞⊤	-1274E+03	KW.	STATE	.37162 162	.6484E+uZ	•103ZE+43	.3266c-33	.1794L-L3	.219/L-U3	
			V=	.46ECE+CO	<b>F/S</b>	SOLVE-FOR	.25C4E-02	.3294E-02	.8373E-02	-2177E+04	.191oE+04	.1127F > 54	
							.9268E-03	.9421E-03	.8955E-03				
570.0000	IEELCEE.	H=1212	b=_	:1387E+03	KH T	STATE	-5094E+02	.6914E+42	-1089E+03	-6513E-03	-216Ut 3.5	.3266:-03	
			V=	.7559E+00	M/S.	SCLVE-FOR	.2564E-02	.3294E-02	.8373E-02	.2186E+04	.1926E+((4	.113/E+64	
		ilia ezaz					.9277E-03	.9426E-u3	.8953E~#3		****		
575.0000	AFTER	H=1212	P=	.1348E+03	KH	STATE	.398/E+02	• 69 U5E + UZ	.108/E+u3	•3393E=03	19421-63	.296/6-13	
			V =	.450 PE+00	M/5	SOL VE-FOR	.25021-02	.3293E+U2	.8355E-02	.21862*64	.19205104	*17516404	
			_				.9277E-U3	.9426L-03	. 8953E-83				
570.0000	BEFCEE	M=5005	P =	.1348E+63	KM.	ST,ATE	.358/E+02	.6905E+02	•108/E+03	*3393E=03	19425-13	. 290/2-13	
Mary Line			V =	•4509E+00	M/S	SOLVE-FOR	.25021-82	. 3293E-02	.8305t-v2	·2186±+84	.15286484	*113/2+64	
						STATE	-617775-03	**************************************	.8953E-U3				
570.000	AFTER	M=2012	P=.	*1344E+03	KH	STATE	.38c5E-02	•69.5E+62	-108/E+03	-2300E+U3	4036540	• 6 3 5 4 5 T L L	
			V=	.4266E+00	MZS	SGLVE-FOR	.23821-02	3198E-02	1940E=02	.2185E+U4	.1920E1U4	*TISIEARA	
							.927,6-03	.9426L-03	09536-03				
570.0000	PEFCRE	M=5151	P =	1344E+03	KM	STATE '-	•3662F : 02	• 69 U5E + UZ	100/2743	*2380E-03	1025-110	1277540	
			V =	.42 EEE 0 G	m/5	SCLVE-FOR	.2382E-02	.3198E-U2	*/940E*UZ	* 5100E+84	*14505+04	*********	
					****	STATE	9277E=03	-94205-03	-074054:3	1000-07			
273-00-01	AFTER	H=2121	}'=	115/6+03	KM	SOLVE-FOR	+34C1C+UZ	3464C-03	*93196702	24 865 401	10725404	4.375401	
			V =	*3653E+##	W/2	20CAC-LOK	. 2382E-UZ	• 9425E-03	*/910E-02	******	*13505.64	*17515404	
			سرراع بسب	ور در شهر در وسنس								···・ラルラモモニカマ ・・・	
>/0.0030	U BELCHE	H=4123	ν=	115/6.463	KM.	STATE	20401E402	*291/6112	10165-00	.4455.00 Tub	1035510	1:375401	
	PPINT		V=	•3653E+0C	M/S	SCLVE-FOR	.2382E-02	.3161E-02	./916t-02	.2186t+04	·1925E+04	*1751F4A4	
		1.1.1.1	22				.92//E-U3	. 94256-93		62676 62			
576.0000	AFTER"	H=4123	F=	.11572+03	KM	STATE SOLVE-FOR	.34E1E+02	.5917E+u2	•9318E+92	.225/E-US	*1536E=63	.64646-63	
	PRINT		V=	.3651E+00	H/S	SOLVE-FOR	.2382L-02	.316UE-02	./916E-02	.218UE+04	*1452F+04	.11576484	
								.92955-03	.5/43E-U3				

IJ

## 3.2.3 SIMSEP

The SIMSEP sample case studies the last 50 days of the 1981 Slow Flyby Mission to comet Encke. The approach trajectory is simulated under the influence of control errors which directly affect the s/c motion, e.g. PG, EPHERR, TVERR, TCERR, etc., and knowledge errors which affect the ability to control the s/c motion, e.g. P, PS, and CXS. A single guidance correction has been included to demonstrate the effectiveness of the guidance algorithm in reducing target dispersions. Although the scope of this analysis in no way exercises the host of options available in SIMSEP, it does use the most fundamental computational cycles and displays the basic output format.

Referring to the sample printout (see pg. 119), the first page shows a listing of the \$TRAJ namelist as has been presented in previous TOPSEP and GODSEP sample cases. The trojectory initialization data which follow define the reference trajectory integrating conditions underlying the SIMSEP analysis. Next, the first mode peculiar namelist, \$SIMSEP, is listed and is followed by the SIMSEP initialization data on the two succeeding pages. Among the error sources are the initial s/c state (PG), the Encke ephemeris (EPHERR), s/c mass (SCERR(1)), exhaust velocity (SCERR(2)), and electric power to the thrusters (SCERR(3)). Thrust control biases (TCERR) in the reference control profile and thrust process noise (TVERR) are also input as error sources. For this run, NCYCLE is set equal to one, thus limiting the analysis to a single simulated trajectory.

Since only one guidance maneuver has been specified in the \$SIMSEP input, i.e. NGUID = 1, only one \$GUID namelist is read. The resultant

guidance initialization data are shown on the next three pages where the guidance event times, target times, active thrust control, and targets are identified. Because INREF = 1 in \$SIMSEP, the s/c state and mass at the maneuver time, sensitivity matrix of targets with respect to controls, and nominal target conditions are input and printed. If INREF had been zero, trajectory information relevant to the guidance event would not be available at this point in program execution, but would have been computed and printed at a later time.

The trajectory simulation begins when the initial s/c errors and any errors that act as biases for the entire Monte Carlo cycle are sampled. For example, Encke ephemeris errors, thrust biases and the process noise correlation times are all sampled to form discrete "actual" values for the current cycle. These actual values and the corresponding reference values are printed as part of the actual trajectory initialization data.

The only maneuver in this simulation is a non-linear guidance correction scheduled to occur 567 days from launch, or just 24 days after the beginning of this Monte Carlo simulation. The active thrust controls are the cone and clock angles over the last two thrust phases (ten days each). The designated target time corresponds to the reference time of Encke encounter (593.5 from launch); this makes the duration of the guidance event 26.5 days. First, the orbit determination process is simulated to determine the estimated maneuver state; that is, the knowledge covariance samples are added to the actual state. Then the estimated trajectory conditions are propagated to the target stopping time, and the resultant target conditions (X, Y, Z relative to Encke) are computed. The miss (target variable

deviations on Page 130) is approximately 16,000 km and the quadratic error, Q, which must be driven to less than one for convergence, is 39.2. Various trajectory related matrices,  $\Phi$ ,  $\Theta_{\mathbf{u}}$  and  $\mathbf{Q}$ , are printed, along with the guidance matrix computed from these sensitivities. The first non-linear guidance correction (printed as "UPDATES" at bottom of Page 130) is estimated (.0593, .0072, -.0774, and .0105) and causes the estimated trajectory to come within 3000 km of the desired targets. The quadratic error resulting from these trajectory corrections is 1.4. Although a maximum of five iterations would be allowed before the mission would be declared divergent, the next set of thrust control updates brings the estimated trajectory within the 2500 km target tolerances, and convergence established. The commanded and executed thrust control corrections are printed, and the actual trajectory is propagated to the final time (TEND) since there are no more maneuvers. At TEND, a Monte Carlo mission summary is displayed showing the final trajectory conditions.

If more sample missions had been requested and run, additional output in the same format would result (if requested) as the computational cycle proceeded. This would, of course, include the sampling of initial errors, data for the guidance maneuver, and summary print. In the event that more than one mission simulation had been executed (without guidance divergence), additional output is displayed after all Monte Carlo cycles in the form of accumulated statistics (means, variances, and correlations). In particular, state error covariances, s/c mass variation, estimated control correction covariances, etc., would be printed and punched (if requested).

									•			
INML=T+								•				
GINE=21.65.65,21.65. ENGINE(11)=.64.								-				·
=3,10. NLP=3, NTP=10.												
STOP=2,												
NCH=2443956.65478.												
TART=543.1												
ND=593.5•												
TATE=1.9484380956197E8.8.408465356318QE7.3.1	142154020700	3E7•					2.0	100				
2.4042728704607.8.1888959228917014340334		•										
MASS=1551.35080453,												
OOHD#0•												
RUST(1.1)=9645401240						1000						
HUST (1,2)=1.,140.,1.,69.1,224.6,2*0.,4.,2*0	)											
(RUST (1.3)=1.,230.,1.,75.,252.,2*0.,2.,2*0.		111				4		1.5		pro- m. 4		
RUST (1.4)=1310185.334.2692.022						1000					1.0	
RUST (1.5)=1.,390.,1.,85.334.269.,2*0.,2.,2*												
RUST (1.6)=1.470.1.85.334.269.2.0.3.2												·
RUST(1.7)=15251120.501.268.742.200			7 7 7 7 7 7	_		manual six establisher ,			L			
HUST(1.8)=15671.355.129.6743.272.2092.2	2*062*0.	•	•	1.	100			• • • • • •			. •	
RUST(1.9)=15771150.64.802*072*0		Ī					. 4.2. 1					
RUST (1,10)=1.,587.,1.,156.8614.78.0227.240											•	
RUST(1.11)=98005*012*0	,,,,,,,	10.00						•		-		
DE=3,							•		. 212			
												3.0
PRINT=G,	· ·											

		TRAJECTORY INITIALIZE	TION		عمالها إيواد
•••••••••	********	************		***********	****
INTTIAL FRACH (REFEREN	CE OATEN				
HUTAN DATT	2447956.5547830004		The second secon		- 4
CALENDAT DATE		3 HR 42 MIN 52.9926 SECS			
TRAUFCTURY START FROCH		AYS AFTER THE INITIAL EPOCH	· · · · · · · · · · · · · · · · · · ·	grading to the contract of the	
JULTSY DATE	2444439.6547803004				
CACENDAR DATE	• 1983 SEP 17	3 HP 42 MIN 52,9920 SECS			
HOOL CAS ACCUSE TO THE	501.5000000000 DAY	S AFTER THE INITIAL EPOCH	and the second of the second o	4.0	
JULTAN DATE	2444550.1547830004		•		
CALENDED TATE	. 1960 NOV 6	15 HR 42 MIN 52.9920 SECS			
INITIAL STATE VECTOR A	T 543.1000000000	DAYS AFTER THE PEFERENCE EF	осн		
POSITION		4103 5575474885.00	74.7451777777	75.03	MAGNITUDE
	194843803561372+09 274642728704612+0?	84934653563189E+08			452657739114£+
EDE MESE		.81838959228917E+U1	14340334129719	.23 .23	8539234784736•
WHENST VELOCITY		0300000 KM/SEC			
LESTRIC POWER AT 1 A. U.		0060500 KM			
HPUSTER FFEITIFILTY		333330			
ASTATTON PRESCURE CHEFFIC		0000000	and the second of the second o		
LIST OF SPANITATING PO	ntes				
5/14 =*>Y4	and the fact of the first of the	The second secon	Agricultural for the first state.		
2010/2		•			_
TARGET PLANET TO ENCKE					_ 9
TARGET PLANET IS ENCKE			and the second s	•••••• ••••••	903
INTEGRATION STEP FACTO		, kie 1 <u>5. lejec 15. lejec</u> 12. lejec 15. lejec 1			Special Control
INVEGRATION STOP FACTO					PO
INTEGRATION STOP FACTO	9.				PO
THRUST THRUST COURTS FACTO		ST PHASE THOUST PHASE THE		พบพิริธิช	POOR
INTEGRATION STOP FACTOR PEFERENCE THRUST COUTPOLS THRUST THRUST FANT PHAGE END TIM	9 .0501 SE THRUST PHASE THRU FTHROTTLING CO	HE ANGLE - CLOCK ANGLE (	ONE RATE CLOCK RATE	⊙F	POOR
INTEGRATION STOP FACTOR THOUST COUTONS THOUST FHO PHASE	.0504 SE THRUST PHASE THRU ETHROTTLING CO	HE ANGLE - CLOCK ANGLE - ( DEG)	CONE RATE CLOCK RATE (DEG/SEC) 1	OF THRUSTERS	POOR
INTEGRATION STEP FACTOR  PEFFRENCE THRUST CONTROLS  THRUST THRUST CONTROLS  PHASE LON THRUST  ON THRUST  1 64-0000	SE THRUST PHASE THRU F THROTTLING CO	NE ANGLE — CLOCK ANGLE — ( 1956) (P56) 3-699019 8-630900	CONE RATE CLOCK RATE (DEG/SEC) 1 0.396000 0.090000	OF THRUSTERS 1.000000	POOR
INTEGRATION STEP FACTOR PEFFRENCE INCUST CONTROLS THOUST THOUST CHO PHAGE ELD TIM MINGER (704)	SF THRUST PHASE THRU F THROTTLING -CO FU 0.301033 6	NE ANGLE — CLOCK ANGLE — ( 1956) (P56) 3-699019 8-630900	CONE RATE CLOCK RATE (DEG/SEC) 1	OF THRUSTERS	POOR
INTEGRATION STOP FACTOR  PEFFRENCE THOUST COUTOOLS  THOUST THOUST COUT  PASS - ENG TIM  ***********************************	SF THRUST PHASE THRU F THROTTLING -CO  10 0.000000000000000000000000000000000	NE ANGLE — CLOCK ANGLE — ( 1956) (956) ( 3.030013	CONE RATE CLOCK RATE (DEG/SEC) (DEG/SEC) 1 0.300000 0.000000 0.000000 0.000000	OF THRUSTERS 1.090000 4.00000	POOR
INTEGRATION STEP FACTOR  FFERENCE INDUST CONTROLS  THRUST THRUST CHAN  PHANE: Sho Tim  #UMBER (702)  1 64.0000  3 270.0000  4 310.0000	SF THRUST PHASE THRU FTHROTTLING -CO FU 0.000003 26 1.300001 6 CO 1.000000 7 60 1.000000 7	NE ANGLE - CLOCK ANGLE - ( 1756) (PS6)  3.670017 0.670000  4.17000 224.60000  5.000333 252.100000  5.334000 269.000000	CONE RATE	OF HRUSTERS 1.000000 4.000000	POOR QUALIT
INTEGRATION STEP EACTOR  PEFFRENCE INPUST CHUTCH CAN THRUST CHAN TIM  PHANCE LIN TIM  ###################################	SF THRUST PHASE THRU F THRUST PHASE THRU F THRUST PHASE THRU F 0.30003 SG 1.303000 7 G 1.303000 7	NE ANGLE - CLOCK ANGLE (1756) (1860) 3.670017 0.670703 3.170000 224.600000 5.000303 252.100000 5.334000 269.00000	CONE RATE	OF HRUSTERS 1.000C00 4.000C00 2.00C000	POOR QUALT
INTEGRATION STEP FACTOR  FFFRENCE 1HRUST CONTROLS  THRUST THRUST CAT)  1 64-0000  3 270.0000  4 310.0000  6 470.0000  7 577.0000	SF THRUST PHASE THRU FTHROTTLING .CO  TU 0.300903 C0 1.303000 7 C0 1.303000 8 C0 1.000000 8 C0 1.500000 8	NE ANGLE - CLOCK ANGLE - (1956) (1956) (1956) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950) (1950	CONE RATE	OF HRUSTERS 1.390009 4.330000 2.300000 2.000003	POOR QUALIT
INTEGRATION STEP FACTOR  FFFFRENCE JHPUST COUTDOLS  THPUST THPUST CHAP  PHASE SHOTTIM  PHASE (702)  1 64.0000  3 270.0000  4 310.0000  4 310.0000  6 470.0000  7 525.0300  5 567.0000	SF THRUST PHASE THRU FTHROTTLING .CO  TO 0.00000 6 C0 1.00000 7 C0 1.000000 7 C0 1.000000 7 C0 1.000000 7 C0 1.000000 7 C0 1.0000000 7 C0 1.0000000 7 C0 1.000000000 7 C0 1.00000000000000000000000000000000000	NE ANGLE - CLOCK ANGLE - (1056) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560) (1560	CONE RATE	OF	POOR QUALT
INTEGRATION STOP EACTOR  PEFFRENCE JHOUST CHOTOM  PHAGE LIN TIM  PHAGE (ACC)  1 64.0000  2 146.0000  3 270.0000  4 310.0000  6 470.0000  7 725.0000  9 577.0000	SF THRUST PHASE THRUF -CO  F	NE ANGLE - CLOCK ANGLE - (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956	CONE RATE	OF IHRUSTERS	POOR QUALT
INTEGRATION STOP FACTOR  PRESENCE IHOUST CONTROLS  THOUST THOUST CHAT IM  PRACE FOR TIM  1014350 (1027)  1 64-63531  2 10.0000  3 2 10.0000  4 310.0000  6 470.0000  7 525.0000  9 577,0000  10 537.0000	SF THRUST PHASE THRU F THROTTLING -CO  TO 0.301003 20 1.303001 7 CO 1.303001 7 CO 1.503001 7 CO 1.303001 7 CO 1.303001 7 CO 1.303001 7 CO 1.305001 12 CO 1.305001 12 CO 1.3050001 12	NE ANGLE CLOCK ANGLE (1056) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (1	CONE RATE	OF IHRUSTERS 1.390000 2.300000 2.300000 3.00000 3.00000 3.00000 7.300000 7.300000	POOR QUALT
INTEGRATION STOP EACTOR  PEFFRENCE JHOUST CHOTOM  PHAGE LIN TIM  PHAGE (ACC)  1 64.0000  2 146.0000  3 270.0000  4 310.0000  6 470.0000  7 725.0000  9 577.0000	SF THRUST PHASE THRU F THROTTLING -CO  TO 0.301003 20 1.303001 7 CO 1.303001 7 CO 1.503001 7 CO 1.303001 7 CO 1.303001 7 CO 1.303001 7 CO 1.305001 12 CO 1.305001 12 CO 1.3050001 12	NE ANGLE - CLOCK ANGLE - (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956) (1956	CONE RATE CLOCK RATE (DEG/SEC) (OEG/SEC) (OEG/	OF IHRUSTERS	POOR QUALIT
INTEGRATION STOP EACTOR  PEFFRENCE JHOUST GOUTOOLS  THOUST THOUST GOUTOOLS  PHAGE LINE TIM  914570 (1927)  1 64.6000  3 270.0000  4 310.0000  4 310.0000  7 797.0000  9 577.0000  10 547.0000	SF THRUST PHASE THRUFF THROTTLING -CO  TO 0.000000 7  CO 1.000000 7  CO 1.000000 8  CO 1.000000 8  CO 1.000000 10  CO 0.000000 10	NE ANGLE CLOCK ANGLE (1956) 1.6300.9 (1956) 3.6300.9 224.60000 5.0300.9 252.190000 5.334000 269.000000 5.334700 269.000000 5.334700 269.000000 9.501010 260.742030 9.674300 272.20920 9.640000 78.022700 0.000000	CONE RATE	OF IHRUSTERS	POOR QUALT
INTEGRATION STOP FACTOR  PRESENCE THOUST CONTROLS  THOUST THOUST CONTROLS  1 64-6327  1 64-6327  2 146-6327  3 270-6700  3 270-6700  4 317-8020  6 470-6267  7 525-6370  9 577,0070  10 547-6360  11 806-660	SF THRUST PHASE THRU F THROTTLING -CO  TO 0.201003 26 1.303001 6 CO 1.903001 6 CO 1.903001 6 CO 1.003001 6 CO 1.355001 12 CO 1.355003 12 CO 1.003003 15 CO 0.003003	NE ANGLE CLOCK ANGLE (1056) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1556) (1	CONE RATE	OF IHRUSTERS	POOR QUALT
INTEGRATION STOP FACTOR  PRESENCE THOUST CONTROLS  THOUST THOUST CHAT  PRACE: FART THE  9174357 (102)  1 64.6000  3 270.0000  3 270.0000  4 310.0000  5 370.0000  6 470.0000  7 525.0300  9 577.0000  10 547.0300  11 800.0000	SF THRUST PHASE THRU FTHROTTLING .CO  T.	NE ANGLE CLOCK ANGLE (1056) (1056) (1056) (1056) (1056) (1056) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1050) (1	CONE RATE	OF IHRUSTERS	POOR QUALT
INTEGRATION STOP FACTOR  PRESENCE IHOUST CONTROLS  THOUST THOUST CHAP  PROSE - EIN TIM  94950 (000  1 64.0000  3 270.0000  4 310.0000  4 310.0000  6 470.0000  7 525.0000  9 577.0000  10 547.0000  11 800.0000  8000 PARMETERS AND ORBITAL  PLANET RASTUS  PLANET RASTUS  PLANET STANCE	SF THRUST PHASE THRU F	NE ANGLE CLOCK ANGLE (1056) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (1	CONE RATE	OF IHRUSTERS	POOR QUALT
INTERRATION STOP FACTOR  PREFERENCE INDUST CONTROLS  THOUST THOUST CHAP  94.025 - END TIM  1 64.0227  2 146.0227  3 270.0700  4 317.0203  4 37.0203  5 77.0303  9 577.0303  11 547.0303  12 547.0303  11 680.0033  800V DAPATETERS AND GRBITAL  PLANET BOUTUS  PLANET SOMEOF	SF THRUST PHASE THRUF	NE ANGLE CLOCK ANGLE (1056) 1056) (1956) 1050019 0.530933 3.170000 224.60000 5.0314000 269.600000 5.3344000 269.600000 5.334703 269.600000 9.501010 260.742030 9.674300 ?72.20920 9.640000 30.60030 6.881400 78.022700 0.000003 9.000003	CONE RATE	OF IHRUSTERS	POOR QUALT
INTEGRATION STOP FACTOR  THOUST CHOUST CHOUSE  THOUST THOUST CHO 10 64.63.03  1 64.63.03  2 70.0000  3 270.0000  4 310.0003  5 70.0000  6 470.0000  7 577.03.03  10 547.03.00  11 806.0000  11 806.0000  800V DAPATETERS AND ORBITAL PLANET PASTUS PLANET STORED PLANET STANETH COLOR TO PLANET STORED PLANET STANETH COLOR TO PLANETH	SF THRUST PHASE THRU F THROTTLING -CO  TO 0.200003 20 1.300001 5 CO 1.303000 5 CO 1.303000 5 CO 1.355003 12 CO 1.355003 12 CO 1.355003 15 CO 0.303003  L ELTHENTS HAVE REEN R .53000303000 CONSTRNT .100000000	NE ANGLE CLOCK ANGLE (10EG) (1	CONE RATE	OF IHRUSTERS	POOR
INTERRATION STOP FACTOR  PRESENCE THOUST CONTROLS  THOUST THOUST CHAY  1 54.6323  1 64.6323  3 270.0003  3 270.0003  4 310.0003  4 310.0003  5 757.0003  5 77.0003  10 547.0300  11 800.0003  11 800.0003  800V PAPATETERS AND ORBITATIONAL  PLANT GRAVITATIONAL  SECTIVACTIV 86	SF THRUST PHASE THRU F THROTTLING -CO  TU	NE ANGLE CLOCK ANGLE (1056) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (156) (1	CONE RATE	OF IHRUSTERS	POOR QUALT
INTERRATION STOP FACTOR  PEFFRENCE IHOUST CONTOOLS  THOUST THOUST CHAP  9405 - END TIM  91950 - (020  1 64.0000  3 270.0000  4 310.0000  4 310.0000  6 470.0000  7 527.0000  9 577.0000  10 547.0000  11 8806.0000  8000 DAPAMETERS AND ORBITAL  PLANET RASTUS  PLANET PASTUS  PLANE	SF THRUST PHASE THRU F	NE ANGLE CLOCK ANGLE (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1056) (1	CONE RATE	OF IHRUSTERS	POOR QUALT
INTEGRATION STOP FACTOR  PEFFRENCE IHOUST CONTOOLS  THOUST THOUST END IIM  NUMBED (02)  1 64.6307  2 146.6000  3 270.0000  4 310.0002  5 795.0300  6 470.0000  7 525.0300  10 547.0300  11 806.0000  800V PAPATETERS AND ORBITA PLANT PASTUS PLANT STANDOR PLA	SF THRUST PHASE THRU F THROTTLING -CO  TU	NE ANGLE CLOCK ANGLE (1056) 1056) (1856) 1.0300.9 (1850) 3.1300.9 224.6.0000 5.0314000 269.00000 5.334000 269.00000 5.334000 269.00000 5.334000 269.00000 5.334000 269.00000 5.334000 269.00000 5.334000 269.00000 5.304000 269.00000 5.304000 269.00000 5.304000 269.00000 5.304000 269.00000 5.304000 272.20920 0.640000 30.000000 EAD-IN FOR ENCKE AT JULIAN ONF-03 KM 20E-08 KM 20E-	CONE RATE	OF IHRUSTERS	POOR QUALIT

SSINSEP IOUT=1. IPUMCH=1. IRAN=1. NGUID=1. NCYCLE=1. INREF=1. EPHERR(1,1,1;=1000., EPHERR(2,2,1)=1000., EPHERR(3,3,1)=1000., EPHERR (4.4:1)=7.6-5. EPHERR (5.5:1)=7.6-5. EPHERR (6:6:1)=7.6-5. NEP2(1)=10. TEPH(1)=593.5. PG(1-1)=146.3..3449..4002..8757..3109..3537. PG(2.2)=473.0..3186..3720..8651..4245. PG(3,3)=148.0,.3426..3183..8401. PG(4.4)=.6060E-3..4307..3905. PG(5.5) = . 2355E-2 . . 5329 . PG(6+6)=.5571E=3+ SCERR(1)=.005, SCERR(2)=.0005, SCERR(3)=.005. TCERR (2.7) = . 002.2 . 02. TCERR(2.8)=.002,2*.02, TCERR(2.9)=.002,2*.02, TCERR(2.10)=.002,2*.02. TVERR(1.1)=.01..573..573. TVERR(1.2)=4.,,125,.125,3*1., TVERR (1.3)=.2..0125..0125. .955745797681E+08+ .240878516603E+0#+ XEND= .637952007701E+08. -.398464859389E+02. -.671498459981E+01, -.437028247409E+01. .144302538776E+04 MEND# PRNHL#T: SEND

```
SIMSEP THRUT DATA
INITIAL CONTROL COVARIANCE AT TRAJECTORY TIME 543.00000 DAYS(J.D. 2444499.65476)
    STANJARO DEVTATTONS AND CORRELATIONS
      .145390099536E+97
           .3449030000
                         .4730000000000000+03
            *4372769730
                               .31850000C
                                             .1480000000031c=+33
98
            .3757600000
                               .3729196009
                                                                 .6960090090002-03
                                                   .34253C0000
VY
            .3139003030
                               . 9651033300
                                                   .3183303000
                                                                      . +307036930
                                                                                     ·235530000330£-62
            ***3795C03C
                               .4245000000
                                                   .8491963000
                                                                       .3905000000
                                                                                          .53290000003
                                                                                                        .557103388CARE-03
     VARIANCES AND COVERTANCES
      .2147769200375+05
                          .233671455100F+05
                                             *#6652904839CE+04
                                                                 .776376354600E-01
                                                                                    .107116397850E+03
                                                                                                        .2352735930166-01
      .239076455128E+95
                          .22372900G0J0E+06
                                             .2230327440305+05
                                                                 .196629336009E+00
                                                                                   · .963647866599E+60
                                                                                                        .11165927335GE+00
      .355~238480002+84
                          . 2230 32744907E+35
                                             .2193400C033CE+G5
                                                                 .3372713852005-01
                                                                                     .1139+328230CE+00
                                                                                                        .592669170800E-31
VX
      . 774 37675461JE-11
                          .106529336000E+00
                                             .3072719889JCE-91
                                                                 .3672363JCC9CE-06
                                                                                     .6145643910CCE-56
                                                                                                        .131833315333E-36
VY
      .107116397A555+90
                         .9635+78-5500E+90
                                             .11094028230CE+00
                                                                 .614664991030E-06
                                                                                     .554602502000E-05
                                                                                                        .6991433794502-06
      .24927050791Cc-91
                         .111859273350E+00
                                             .69266917080CE-01
                                                                 .131833815300 E-06
                                                                                    .699149879450E-06
                                                                                                        .313363416383E-06
ETGENVALLES OF THE INTYAL COVADIANCE
   .173537358773E+05 .229196276306E+06
                                                            MATRIX OF EIGENVECTORS (TH. COLUMNS).
      £54501
                          EGVECZ
                                              EGVEC3
                                                                 EGVEC4
                                                                                     EGVEC5
                                                                                                         EGVEC6
   .7*15770457J2E+0C
                       -118(3244+1195+00 - -672225478928E+C0 ---304106106567E-05- -346989871513E-06
                                                                                                     .1805499762916-05
  -. 135499744472E-51
                      .986763651579E+00 -.1617010334A4E+30 .46576597+093E-06 -.421292199125E-05
                                                                                                     .13236u706+31E-05
 -----
                      .111157412967E+03
                                          .722451782220±+60
                                                           -- 1136?12404684-35 -- 112793662096E+05
                                                                                                   -.26115-735793E-J5
   .257135352229E-05
                      .5141346641625-95
                                          -2288040106645-05
                                                            .8682448863266+04 .1067935040366+00
                                                                                                   -.45453655389+E+61 -
  -.53-979211727E-06
                      .425066137771E-05 -.150334772019E-06 -.155967633633E+00
                                                                                 .985839841742E+39
                                                                                                   -.6221573433672-01
 --2111311550895-05
                      .53J263439750E-06
                                         .235521346292E-05
                                                             .479932923913E+00
                                                                                 .129585835090E+00
                                                                                                     .872572401992E+00
```

61. <del>120,28</del> anianipusis a	and the same and t	Anning the second secon	مناوي مشتضعها مضيف اطاوان والمساد عميدات والعمادات		take seeks	An angle in any annual	_ D
- ten enga							RIGIN.
	SERVICE CONCERTS SHOITHING CONCERTS	Ca STATE VECTOR AT EF E+08 Y .95574 E+12 VY86683	1157296c+08 Z				AL PAGE
	#	3,000000000	'.100000'00100E+04 0.0000000000 0.5000000000		.70000000000000000404 0.00000000000	.7006003000035+24	
4-19-2		Y -13000000000000000000000000000000000000	Z 0. 0. -10000000000000000000000000000000	VX 0. 0. .490000000000E-08	0. 0. 0. 0. 0. 0. 0.	VZ C. O. O. C.	

a record on	0306+07 .1000301	PMEMERIS ERROR COVARI 30303GE+07 .1006009		0000000000000	.4900000000000000000	.4900000000E-05
FGVEC1	ENVECTORS (IN POLI EGYE		C3	EGVEC4	EGVEC5	EGVEC6
ŋ.		000000E+01 C.	0.		0.	3.
C.	C.	.1300000	00300E+01 0.	00000000E+J1.	0.	0.
C.	6.		0.	. 18+300000000	.100000000000E+31	
	<b>6.</b>	<b>.</b>	0.		0.	.10000000000E+01
		S of the state of			nte et para ministratura de l'acceptant de l'accept	r en
INCESTATUTTEE	THE THE ENGLOSTED	SEPS PARAMETERS (ONE				
	TA THE PULLOWING	NOMINAL V	ALUE STANDARD	OFVIATION		
S/C MASS	الوالمهوري ورجعا ويعفر المعرادات		530C30	53000000 KG		and the second second
ELECTRIC PONE		29.418000 21.650000	1000 .000	05000000 KM/SE 50000000 KM	G	
		<b>4.7</b> 77000.		35000335 7#		
and the first the second second						
		رم ربو و مستخدم ووی	the second of the second			
ginam protestina de resignam protestina de la gina de l		and the second of the second o		جوينون ۾ ان او هڪ ويو. ريان	الماسية ودوالدا المهامة الماسية	and the second s
			A STATE OF STREET, STR			
	L F07000 (ONE-STG)		F THRUST PHASE	THPUST PHASE	THRUST PHASE	
THRUST TO	HRUST PHASE THRUS	ST PHASE THRUST PHAS	E CLOCK ANGLE	CONE PATE	CLOCK RATE	
THRUST TI	HRUST PHASE THRUS	ST PHASE THOUST PHAS OTTLING CONE ANGL (NEG)	E CLOCK ANGLE	CONE PATE LDEG/SEC) -	CLOCK RATE	
THRUST TI	HRUST PHASE THRUS END TIME THRU (DAY)	THASE THOUST PHAS CONE ANGLE (OEG)	E CLOCK ANGLE	CONE PATE 	CLOCK RATE 	
THRUST TI	PRUST PHASE THRUS END TIME THRUS (DAY) 0.030300 0.030300	ST PHASE THOUST PHAS OTTLING CONE ANGL (NEG)	E CLOCK ANGLE	CONE PATE LDEG/SEC) -	CLOCK RATE	
THRUST TI	HRUST PHASE THRUS END TIME THRU (0.000000 0.000000 0.000000	ST PHASE THOUST PHAS OTTLING COME ANGL (NEG) .032003 .02000	E CLOCK ANGLE (DEG) 0 .020000 0 .020000	CONE PATE 4DEG/SEC) - 0.000000 0.000000	CLOCK RATE (DEG/SEC) 	
148UST TI PHASE NI)43E2 3	HRUST PHASE THRUS END TIME THRU (0.000000 0.000000 0.000000	ST PHASE THOUST PHAS OTTLING CONE ANGL .002003 .02000 .002003 .02000	E CLOCK ANGLE (DEG) 0 .020000 0 .020000	CONE PATE 4DEG/SEC) - 0.030303 0.000503 0.000000	CLOCK RATE (DEC/SEC) 	
148UST TI PHASE NI)43E2 3	HRUST PHASE THRUS END TIME THRU (0.000000 0.000000 0.000000	ST PHASE THOUST PHAS OTTLING CONE ANGL .002003 .02000 .002003 .02000	E CLOCK ANGLE (DEG) 0 .020000 0 .020000	CONE PATE 4DEG/SEC) - 0.030303 0.000503 0.000000	CLOCK RATE (DEC/SEC) 	
148UST TI PHASE NI)43E2 3	HRUST PHASE THRUS END TIME THRU (0.000000 0.000000 0.000000	ST PHASE THOUST PHAS OTTLING CONE ANGL .002003 .02000 .002003 .02000	E CLOCK ANGLE (DEG) 0 .020000 0 .020000	CONE PATE 4DEG/SEC) - 0.030303 0.000503 0.000000	CLOCK RATE (DEC/SEC) 	
148UST TI PHASE NI)43E2 3	HRUST PHASE THRUS END TIME THRU (0.000000 0.000000 0.000000	ST PHASE THOUST PHAS OTTLING CONE ANGL .002003 .02000 .002003 .02000	E CLOCK ANGLE (DEG) 0 .020000 0 .020000	CONE PATE 4DEG/SEC) - 0.030303 0.000503 0.000000	CLOCK RATE (DEC/SEC) 	
148UST TI PHASE NI)43E2 3	HRUST PHASE THRUS END TIME THRU (0.000000 0.000000 0.000000 0.00000	ST PHASE THOUST PHAS OTTLING CONE ANGL .002003 .02000 .002003 .02000	E CLOCK ANGLE (DEG) 0 .020000 0 .020000	CONE PATE 4DEG/SEC) - 0.030303 0.000503 0.000000	CLOCK RATE (DEC/SEC) 	
THRUST TI PHASE NIMATE 3 10 11	HRUST PHASE THRUS END TIME THRUS .(DAY) .0.000000 .0.00000	ST PHASE THOUST PHAS OTTLING CONE ANGL .002003 .02000 .002003 .02000	E CLOCK ANGLE (DEG) . (DEG)	CONE PATE 4DEG/SEC) - 0.000000 0.000000 0.000000	CLOCK RATE 	
TIME-VARYING	HRUST PHASE THRUS #NO TIME THRUS (NAY)  0.000000 0.000000 0.000000 0.000000 0.000000	ST PHASE THOUST PHAS OTTLING CONE ANGLE (NEG) .022001 .022001 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .0220000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000 .022000	E CLOCK ANGLE (DES) 0 .027030 0 .020300 0 .020300 0 .020300	CONE PATE  (DEG/SEC)  0.030303  0.000000  0.0000000  STANDA  TN C	CLOCK RATE(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG	
THE-YERVING	HRUST PHASE THRUS END TIME THRUS  - (DAY) - (CO0000 - (C00000 - (C000000 - (C00000 - (C000000 - (C00000 - (C00000 - (C00000 - (C000000 - (C00000 - (C000000 - (C000000 - (C000000 - (C000000 - (C000000 - (C000000 - (C0000000 - (C0000000 - (C0000000 - (C0000000 - (C00000000 - (C0000000000 - (C000000000 - (C000000000000000 - (C000000000000000000000000000000000000	ST PHASE THOUST PHAS OTTLING CONE ANGL	E CLOCK ANGLE (DES) 0 .02000 0 .02000 0 .02000 0 .02000 0 .020000	CONE PATE  4DEG/SEC) - 0.030303 0.000000 0.0000000  STANDA TN C .20030	CLOCK RATE 4DEG/SEC) 300030 300030 300030 300030	
TIME-VARYING	HRUST PHASE THRUS END TIME THRUS - (DAY) - (CO03(0 - CO03(0 - CO03	ST PHASE THOUST PHAS OTTLING CONE ANGL .002003 .02000 .002003 .02000 .002003 .02000 0.700000 0.00000	E CLOCK ANGLE (DES) 0 .02000 0 .02000 0 .02000 0 .02000 0 .020000	CONE PATE (DEG/SEC) 0.036003 0.0000000 0.0000000	CLOCK RATE(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG	
THEOTTI  COCK A	THPUST FPPOPS  THPUST FPPOPS  CTHP	ST PHASE THOUST PHAS OTTLING CONE ANGL .032003 .02000 .002003 .02000 .02000 .02000 0.000000 .000000 SIGHA .EVEL	E CLOCK ANGLE (DES) 0 .02000 0 .02000 0 .02000 0 .02000 0 .020000 100000 0 .000000 10000000 10000000000	CONE PATE  4DEG/SEC)  0.000000  0.000000  0.000000  STANDA  TN C  .20000  .12500	CLOCK RATE(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG	
THEOLY TO COOK AND CHOCK A	THPUST FPPOPS  LTMG	ST PHASE THOUST PHAS OTTLING CONE ANGL .002003 .02000 .002003 .02000 .002003 .02000 0.700030 0.00000 SIGHA _EVE	E CLOCK ANGLE (DES) 0 .02000 0 .02000 0 .02000 0 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1 .02000 1	CONE PATE  4DEG/SEC) - 0.030303 0.000000 0.0000000 The Control of	CLOCK RATE(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG	
THEOTTI  COCK A	HRUST PHASE THRUS END TIME THRUS (NAY)  0.000000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.000000	ST PHASE THOUST PHAS OTTLING CONE ANGL  .002003 .02000 .002003 .02000 0.002003 .02000 0.000000 .02000  STGMA LEVEL	E CLOCK ANGLE (DES) 0 .02000 0 .02000 0 .02000 0 .02000 0 .020000 100000 0 .000000 10000000 10000000000	CONE PATE (DEG/SEC) 0.036003 0.0000000 0.0000000  STANDA TN C .20030 .12500	CLOCK RATE(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG/SEC)(DEG	

3.5.			• •	
	-F-AME	-		
		•		
				***
F- 10 80				
	بالمصابق المستسيدي		Caralla e Carallenia de Caralla	era kro <del>na</del> saa see see saa
(● Table 1 to the control of the co		•		
				and the second second second second
90,44,.02,				••
.8615.			نجمه بنه كالمشتشأ بدياء	
63.				
•17•				
				معاملت المراجع المتلادين
9F+09968736907210E+08.	.301565939457E+08.	•		
	184036249666E+03.			
	***			
	184006249666F+03	Set 1		
		The second section of the second section is a second section of the second section of the second section secti		and any analysis when the state of the state of
EAADA "JAJARASODOGEARAS	*FATTATE 13331FANG			
転送 ひんしゅうしゅうしょ 集りらい				
State of the second second	. ∮ na saa angera sa saa			
	.8615. 63. .17. 9E.09968736907210E.08. E.02362808335578E.01, .9E.04. 7E.03235964598179E.03. E.01195337447944E.01, 5E.04. 77E.03235964598179E.03		59,1202, .37,5068; . 90,44,.02861563, .17.  9E.09, .968736907210E+08, .301565939457E+08, E.02, .362808335578E+01,133027741283E+01, .9E-04, .235964598179E+03,184036249666E+03, E.01, .195337447944E+01, .114062287871E+01, .77E.03,235964598179E+03,184006249666E+03, E.01, .195337447944E+01, .114062287871E+01, .77E.03,235964598179E+03,184006249666E+03, .77E.05,852658367394E+06, .415844218605E+05, .8E-05, .852658367394E+06, .393442788574E+06, .8E-05, .393442788574E+06, .8502596044424E+06, .393442788574E+06, .8502596044424E+06, .393442788574E+06, .8502596044424E+06, .393442788574E+06, .8502596044424E+06, .393442788574E+06,	.59,12.02, .37,506890,44.02, .8615, .6317.  9E.09, .968736907210E.08, .301565939457E.08, E.02, .362808335578E.01,133027741283E.01, .9E.04, .7E.03,235964598179E.03,184036249666E.03, E.01, .195337447944E.01, .114062287871E.01, .5E.04, .77E.03,235964598179E.03,184006249666E.03, E.01, .95337447944E.01, .114062287871E.01, .5E.04, .77E.03,235964598179E.03,184006249666E.03, .8E.05,852658367394E.06, .415844216605E.05, E.05, .142732346640E.05, .393442788574E.06, E.05, .142732346640E.05, .393442788574E.06, E.05, .502596044426E.06, .562322738143E.06,

DESIGNATED TO DESIGNATED TO		8 AT 567.01000 DAYS 8 AT 597.0000 DAYS 9 26.4900 DAYS				
DEFENENCE TO	A JECTORY STATE VECTOR AT	THE GUTDANGE EVENTE:	.0.# 2444523.66	478)		
×	.141936714759E+39 KM			7.00		· · · · · · · · · · · · · · · · · · ·
<b>Y</b>	.96073F997210E+34 KM					
7	301565939457E+u3 KM	المساجدة منسود كالمادة الأسادية الرياضية. المساجدة منسود كالمادة الأسادية المساجدة المساجدة المساجدة المساجدة المساجدة المساجدة المساجدة المساجدة المساجد	الأولانية المستدامة المساد		<u></u>	
7 X	286938051950E+02 KM/ .3527087755795+31 KM/					
٧Z	133027741283E+01 KM		المراجعة بمدارع والما			
1493.42	61.7 V6					ورب دو الربيدية وفتسته
1493.47		•				
CHERCAL THEIR	ST PHASE NUMBER					13
SENCTITUITY	MATRIX OF TARGET VARIABLE	S U.D. T. CONTOOL WAS	T45(55) 3 V /			
	9544781727+05 98525368		14775+0657d1			e e e e e e e e e e e e e e e e e e e
	and the second s	66405+05 +.50259604		79458368E+04		
-415	0442136657+45 .39344278			59293357E+C6		
REFERENCE TO	# JECTORY STATE VECTOR AT 372671830177F+63 KM	THE TAPGET TIME(1.0.	= 2444550.15478	1		
y	-,2359545391795+93 KM	The second secon	*****			The state of the s
7	18407F2436F6E+93 KM					75
V×.	-70489501393+€+01 KM/			السار وأسارات كالماسات		
VY VZ	.105337447944E+u1 KM/					₩ E
₹.4	.114C52287371E+01 KM/	750				රව
	네 얼마나 나는 이번 없다.					52
SEDE ATES						A CR
1443.40	R39 46		المنابعة والمستعد والمدار والمعادات	and the same of th	* * * * * * * * * * * * * * * * * * *	ORIGINAII OR POOR Q
DESTENATED T	APAFT VAPIABLES					ORIGINAII PAGE IS OF POOR QUALITY
, ಇಲಕ್ಕಡ ಬ್ರಾಕ್ಟ್ ಹಿ ಕ್ರಾಕ್ಟ್ ಕ್ರಾಕ್ಟ್ ಕ್ರಾಕ್ಟ್	TARGET VALUE	5 TOLFRANCE			. a sidemanagabanen .	
	Y3.26716371775	+93 .25CJ30C0000=				<b>E</b> 3
	Y = 2756545941795					्रावु हा
	2164065249556=	+03 .25000.00000.02	+U4 KM	er en er		K B
EFFECTIVE TA	PRET PLANET FOR THIS GUTO	ANCE EVENT IS ENCKE				. •
					and the state of the same	and the same of th
SEFECTIVE SPI	HEMERIS PLANET FOR THIS O	UIDANCE EVENT IS ENC	⟨E			
THE GHIDANCE	LAM FOR THIS EVENT IS LO	H THRUST-MONLINEAR H	ITH 5 ITERATIO	ON(S)		1 1 2 2 2 2 2
BUTH INSOFAL	MATPIOTS OF TARGET CHANGE VF AND LOW THRUST GUIDANG	PFR CONTROL CHANGE I	ARE COMPUTED BY	INTEGRATING VAR	CATIONAL EQUATIONS	FOR
ACTIVE THOUS	T CONTROLS FOR THIS GUIDA	NCE EVENT				
	THOUST PHASE NIMBE		ES	The second secon	granda and the control of the contro	
	14 (14 (14 (14 (14 (14 (14 (14 (14 (14 (	CONF ANGLE				
		CLOCK ANGLE				
ه ويهمونون لا تحميد معنوه مناه بنسوا مدادة و يوجب		CONE ANGLE-	, <del></del>			
	10	CLOCK ANGLE				

```
P MATOTY
        .56730339999365+62
                            -. 700010101000E+00
                                                 .13000000000E+00
                                                                      .5905000000000E+46
                                                                                         -.1203003000005+20
                                                                                                               .233003030303E-81 ....
       -.7309033000396+00
                             .231400073007E+32
                                                -. 79000000001102+03
                                                                     -.420CGGGGGGGGGE+8G
                                                                                           .370000000000C3E+30
                                                                                                               -.50333333333325+00
       -. 7000nc000000E+00
                                                 .37233 GOOG 310F+32
                                                                      .130000000000E+20
                                                                                          .650000000000E+00
       .5999999999999F+09
                            -.4230939000anE+60
                                                 .130363030373E+00
                                                                      .278000000000000000
                                                                                           .13000GGGGGGGGGE+0G
                                                                                                                -.1203r0303903E+00
                            **700000333300E+30
                                                 -.3230333663352+36
                                                                      .130000000000£+00
                                                                                           .22203030303032-33
                                                                                                               +.41338GG088GGE+83
                            -.500000000000015+00
        .277980369900E-u1
                                                 .68000000000000+10
                                                                      -3000000000000E-01
                                                                                          -.41000000000000±+30
                                                                                                               .1973300303C0E-93
PS MATOTY
        .441000010000E+63
                             .6100000000000E+00
                                                 .350.3333346 nE+06
                                                                      .900000000000E+10
                                                                                          .2339366333369E-31
        .A1-2-2-010000_+e6
                             .7640000000000E+03
                                                 ~520031300130E+30
                                                                      .370C00000000CE+00
                                                                                         -.15c332C3S334E+33.
        .3503000000000000000
                             .5200000000003E+00
                                                  .363330202330E+03
                                                                      .570C00000000E+00
                                                                                          -.4300035000032#30
                                                                                                              -.63030000000012+00 -
       .9300000000000000
                             . 57333000000E+80
                                                 .570000000330E+30
                                                                      .69160730006CE-64
                                                                                                              -.173332003263E+6%.
                                                                                          -.670300333333E+S0
       -.447220C0C0CE+CO
                            -. 86375C3Q35J7E+QB
                                                 -.439090399396E+00
                                                                     -.6730000000302+60
                                                                                           .105J00000000E-03
                                                                                                               .1539302133895+08
                                                -.630200000000E+00---.17000000000E+00-
        .2000000000E+01-
                            .150300000000±+00
                                                                                                               .51600000000022-04
CXS MATPIY
      0.
                           2
                                                                     а.
      C.
                                                0.
                                                                     0.
                                                                                         0.
                                                                                                              ٥.
      0.
                           0.
                                                ٥.
AUG-D MATDIY
      - .321829290000GE+64
                            -.91891254500GF+3*
                                                 .2745675270J0F+03
                                                                      .930485460D00E-02
                                                                                         -.15112872J03CE-02
                                                                                                               .2235162330GJE-03
       -. 91 991 254 0 CD 0 E+03
                             -535459600000F+03
                                                -.680546738300F+03
                                                                     -. 270132640000E-02
                                                                                           .1930719600032-02
                                                                                                               -. 22792900000E-02
                                                                                             n.
        .274557527000E+03
                           -.680586738000E+03
                                                 .138607290330E+04
                                                                      .134549222GB0E-02
                                                                                                                .498733082300E-02
                                                                                         -.264481920003E-02
       .930455453000E-02
                            -. 27u1825+00005-02
                                                 .134549220100E-02
                                                                      .772843680366E-67
                                                                                           .ac23080000000E-08
                                                                                                               .16429800000JE-08
                                                    Э.
       -.15112372000000-02
                             ·190071960000F-02
                                                -.264431920100E-02
                                                                      .802308000000E+08
                                                                                           .492843000000E-07
                                                                                                              -.1793394300032-07
                                                   0.
                                                                                             0.
                                                                                                                  5.
                            -. 22792900000E-02
                                                 .498733980330E+02
                                                                      .164298000000CE-58
                                                                                         -.179369406630E-07
                                                                                                               .388393838388E-37
                                                                                             ٥.
           ·4字:4313888C0E+96
                                .205523640100E+06
                                                     .560293500000E+05
                                                                          -274257980000E-01
                                                                                             -.23374200000CE-01
                                                                                                                   -45511200GCG0E-03
      0.
           . 2051 23640000E+05
                               -- 56759500000C+16
                                                  --59133600CDBBE-02
           .557290501000E+C5
                                .144212643037E+06
                                                     .131769303030E+06
                                                                          .14297481303GE-31
                                                                                                                  -.11803404CGCGE-01
           .27-25790000CE-01
                                -453293850C00E-01
                                                                                              --------
                                                                                                                  -.60614528CC03E-09
                                                                                                                   -812763386838E-39
                                                   -.118004040000E-01
                              -.59133603000CE-J2
                                                                         -.60614520000CE-09
                                                                                               .81270000000E-09
                                                                                                                   .26625600CQ30E-08
```

391 164	65579715+60	.221172594637E	+00 -+3180738617021+0	0121591624321E-04	828273713912E-05	609579734601E-
.9/1900	033/3/15400	6 CC 17 ( \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	0.	0.	0505121173155-02	0.
	73691=30+00	. 591445365894E		03794734207302-04	351198652095E-04	2673297142116-
.21334	25713805+50	.395+871797535		0165329039466E-04	0. 122817837841E-04	135216697443E-
.279214	4683555£-05	.328118339149E	0. -04588209815258F-0	6 .978638497043E+00	3. 198777924616E+\$0	0. 524788313327E-
713566	5746423E-06	0. .5675483877775	0. -04162429413966F-9	0. 5 .190553556784E+J0	0. .781197704041E+00	]. .594490946923E+
	5271145E-06	0. 181967932428E			0. 591791755909E+00	J. .802387989336E+
2.		0.	0.	0. ņ.	û. C.	3. 0.
0.	07772799442F+	379919598	*42E+00 .17800454187	6E+00907198567522E	-07395011225396E	-071593380462
30	14591717394F+	03 .888646157	872E+1034282322372	72+005030765389992	-07 •126897993347E	-051109634647
	3336312229F+	256992335	92237372180	ūE+09163270065817€	-07560187568279E	-09 .1108479122
9. .53	.9719723271E <b>-</b>	0. •07 •759807717	0. 439E+J7 .26114282828	0. 6E-07 .993958133316E	+00 .692137701738ۥ	-0. -013518616409
.57	72532425036=-	0. -17192719872	0. 194F-06 .55152698342	0. 36-37737783627639E	0. -01 .995936109372E	0. +005165237827
0.	21490632525=-	1.	0. 1963E-07 98629730455	0.	. C.	9.
.763413	5945398 <b>5</b> +34	•553524286285E				
. 763419 .11	77198974045+	.713245255	784E+05,			
.763417 .10	7719897404E+		784E+06,			
.10 CORE PEQUIPTHE	7719897404E+	.05 .713245255 : JO3, 077490 00	7A4E+06,88960346811 TAL) 13 OCTAL)	9E+05 .5, 922253393E		.1439626094852- -68 .1416344361
.763419 .10	7719897404E+	.05 .713245255 : JO3, 077490 00	7A4E+06,88960346811 TAL) 13 OCTAL)			
.763417 .10	7719897404E+	.05 .713245255 : JO3, 077490 00	7A4E+06,88960346811 TAL) 13 OCTAL)	9E+05 .5, 922253393E		
.763419 .10	7719897404E+	.05 .713245255 : JO3, 077490 00	7A4E+06,88960346811 TAL) 13 OCTAL)	9E+05 .5, 922253393E		
.763419 .10	7719897404E+	.05 .713245255 : JO3, 077490 00	7A4E+06,88960346811 TAL) 13 OCTAL)	9E+05 .5, 922253393E		
.763419 .10	7719897404E+	.05 .713245255 : JO3, 077490 00	7A4E+06,88960346811 TAL) 13 OCTAL)	9E+05 .5, 922253393E		
.763417 .10	7719897404E+	.05 .713245255 : JO3, 077490 00	7A4E+06,88960346811 TAL) 13 OCTAL)	9E+05 .5, 922253393E		
.763417 .10	7719897404E+	.05 .713245255 : JO3, 077490 00	7A4E+06,88960346811 TAL) 13 OCTAL)	9E+05 .5, 922253393E		
.763419 .10	7719897404E+	.05 .713245255 : JO3, 077490 00	7A4E+06,88960346811 TAL) 13 OCTAL)	9E+05 .5, 922253393E		
.763419 .10	7719897404E+	.05 .713245255 : JO3, 077490 00	7A4E+06,88960346811 TAL) 13 OCTAL)	9E+05 .5, 922253393E		
.763417 .10	7719897404E+	.05 .713245255 : JO3, 077490 00	7A4E+06,88960346811 TAL) 13 OCTAL)	9E+05 .5, 922253393E		
.763417 .10	7719897404E+	.05 .713245255 : JO3, 077490 00	7A4E+06,88960346811 TAL) 13 OCTAL)	9E+05 .5, 922253393E		
.763419 .10	7719897404E+	.05 .713245255 : JO3, 077490 00	7A4E+06,88960346811 TAL) 13 OCTAL)	9E+05 .5, 922253393E		

			HONTE CARLO CY	CLE NUMBER 4		· · · · · · · · · · · · · · · · · · ·
		OUTPUT DATA	FOR THE ACTUAL TRAJEC		TAITTTAI TTATTON	i cumpa pp cum
**********	*********	*********	***********	**********		
<del></del>					The state of the s	A design of the second
S/C STATE	E VECTOR AT T		5.07000 DAYS(J.7.= 244			
		ACTUAL	REFERENCE	DEVIATION		
	7	*194643919323E+39 *8408498469545+38		.109460810661E+03 .331133160618E+03	KM	The state of the
	7	.314214644455E+0A		.75761469JD65E+D2	<b>₹</b> ₩	
	, vy			.624682910J29E-03	KH/SCS	
	VY	.8186928445807+81	.8188895922895+81	.3252399773155-04	KM/SEC	
	٧7	1456537493292-01	1434033412973-01 -	.226639953224E-03	KM/SEC	•
CAMPI TO C	S/C+SEP PAPAM	ertene	•			a company agreement
24-LL ,	ANDAZER MAGRA	ACTUAL	REFERENCE	DEVIATION		÷
S/C VAS	se .	1551.35404	1551.35380	55077	KG	B. B. C.
EXHIUSI	VELOCITY	29.41357	29.41800	.03057	KM/SEC	
ELEGTP1	CO PONED	21.55359	21.65000	.00059	KH	•
DEUTATIO			FROM THE REFERENCE VAL	HES LETES CLUSITING	THOUST RIASES	
AFATA (10	IN UP THE ACT	UAL IMHUSI CUNIROLS	THRUST PHASE THRUST PH	ACE TENDER SARREING	THRUST PHASE	
PH15		HE THPOTTLING	CONT ANGLE CLOCK AN		CLOSK RATE	
HOWAS			(956) (956)		(DEG/SEC)	
	0.001		.005946 .002		0.000000	
			002368 .006		0.00000	and the same of the same
10			.072327004		0.00000	
	0.039	0.00000	0.000000 0.000	0.00000	0.00000	• * *
SECIOOOG	LS OF DIAGON	IAL ELEMENTS OF THE T	HPUST PROCESS TIME COR	PELATION MATRIX		The second of th
FISCA	בשטנב24 =	IAL ELEMENTS OF THE T	CHPUST PROCESS TIME COR	PELATION MATRIX .1202714190	(NAYS)	
FISCA	1 PROCEZE =					<b>2</b> 2
2=004: Elact	5 5500c2c = 550cc2c =	7.0790508259 1.000100000	. 1202974245 1.000000000	.1202714190		OBL
- Zabunt Elact	5 5500c2c = 550cc2c =	7.0399608269 1.9709793000 F THEUST PROCESS NOT	.1202974245 1.0000000000	.1202714190		ORIGI OR P
FIRT A	5 5500c2c = 550cc2c =	7.0790508259 1.000100000	.1202974245 1.000000000000000000000000000000000000	.1202714190		DRIGIN OF PO
FIRST SFORMS THITTAL V THRUST	PROCESC = 1 PROCESC = 14LULS FOR TH	7.0733668269 1.3763733636 F THEUST PROCESS NOT FIRST PROCESS	.1202974245 1.0000000000	.1202714190		DRIGINA DE POOI
FIRST SECOND THITTAL V THRUST CONF A	######################################	7.033608269 1.3703730030 F THEUST PROCESS NOT FIRST PROCESS 0719548877	.1202974245 1.000000000000000000000000000000000000	.1202714190		DRIGINALI DE POOR
THOUST CONF A CLOCK	PROCESC =  VALUES FOR TH  MACHET (DEC)  NOCE (DEC)	7.0398608269 1.300103000 F THEUST PROCESS NOT FIRST PROCESS 019546377 0473161942 2465761609	.1202974245 1.000000000000000000000000000000000000	.1202714190		DRIGINALI P DE POOR 9
THITTAL STORM CONF A CLOCK A C	PROCESC = 1 PROCESC = 14LULS FOR TH 14ACHITUDS 1116L= (DEG) 1116LE (DEG) 1116LE (DEG) 1116LE (DEG)	7.0393608269 1.000103000 F THRUST PROCESS NOT FIRST PROCESS 019546397 0473161942 2465761609	.1202974245 1.000000000000000000000000000000000000	.1202714190 1.060700000	(DAYS)	DRIGINALI PA DE POOR QU
THOUST COOK A	PROCESC = 1 PROCESC = 14LULS FOR TH 14ACHITUDS 1116L= (DEG) 1116LE (DEG) 1116LE (DEG) 1116LE (DEG)	7.0797608269 1.0707030000 F THEUST PROCESS NOT FIRST PROCESS071954632704731619452465761609 HET IS FMCKE PR FOR THE EPHEMERIS	.1202974245 1.000000000000000000000000000000000000	.1202714190 1.0607000000	(DAYS)	ORIGINALI PAG OR POOR QUA
THOUST COOK A	PROCESC = 1 PROCESC = 14LULS FOR TH 14ACHITUDS 1116L= (DEG) 1116LE (DEG) 1116LE (DEG) 1116LE (DEG)	7.0395608269 1.300103000  F THRUST PROCESS NOT FIRST PROCESS01994638770431619422465761609  HET IS FACKE RR FOR THE EPHEMERIS ACTUAL	.1202974245 1.000000000000000000000000000000000000	.1202714190 1.0607000000 YS(J.G.= 2444550.	(DAYS)	OF POOR QUAL
THETTAL STORE AS CLOCK AS CLOC	PROCESC = 1 PROCESC = 14LULS FOR TH 14ACHITUDS 1116L= (DEG) 1116LE (DEG) 1116LE (DEG) 1116LE (DEG)	7.0797608269 1.0707030000 F THEUST PROCESS NOT FIRST PROCESS071954632704731619452465761609 HET IS FMCKE PR FOR THE EPHEMERIS	.1202974245 1.000000000000000000000000000000000000	.1202714190 1.0607000000	(DAYS)	ORIGINAL PAGE I
THE STORY OF	PROCESC = PROCESC = VALUES FOR TH PASSITURE (DES) NOTE (RES) PHEHERIS PLAN NOTE NECTO PHEHERIS PLAN NOTE NECTO	7.0398608269 1.300103000  F THRUST PROCESS NOT FIRST PROCESS01954637704731619422465761609  RET IS FACKE  RET OF THE EPHEMERIS ACTUAL .63765187407021-19	.1202974245 1.000000000000000000000000000000000000	.1202714190 1.0007030000 YS(J.O.= 2444550. JEVIATION .6039652259756+33	(DAYS) 25478)	DRIGINALI PAGE IS DRIGINALI PAGE IS
THOUST CONF A	PROCESC = 1 PROCESC = 14 PROCESC = 14 PROCESC = 14 PROCESC = 14 PROCESC = 15 PROCESC = 16 PROCESC = 17 PROCESC = 17 PROCESC = 17 PROCESC = 18 PROCES	7.039608269 1.300103000  F THRUST PROCESS NOT FIRST PROCESS01994842704731613422465761609  RET IS FANKE RET IS FANKE ACTUAL .63766187402)2+04 .35575341563764E338418953653712E+p2	.1202974245 1.0000100001  SE SECOND PPOCESS 0.0000000001 0.0000000000 0.0000000000	.1202714190 1.0607000000 YS(J.D.= 2444550, DEVIATION .6039652259*52*03 .2658301442362403 .2939129327542403	(DAYS)  15478)  KM  KM  KM  KM  KM  KM  KM/  KM/  KM/	PAGE
THOUST COOK A	PROCESC = 1 PROCES	7.0 19760 8269 1.0 1970 10300  F THPUST PROCESS MOT FORT PROCESS0 195463970 4731619422 465761609  IET IS FMCKE R FOR THE EPMEMERIS ACTUAL .63766187402372+04 .3557503156472+03413953667412E+01413953667412E+01	.1202974245 1.000000000000000000000000000000000000	.1202714190 1.0607000000 YS(J.D.= 2444550, DEVIATION .639652259752-03 .2658301442362-03 .2939123327542-03 .7959797617297-04	(DAYS)  25478)  KM  KM  KM  KM/ KM/ KM/ KM/ KM/ KM/ KM	DEJGINAL PAGE IS DEJGINAL PAGE IS DEJGINAL PAGE IS
THENT FOR FIRST	PROCESC = 1 PROCES	7.039608269 1.300103000  F THRUST PROCESS NOT FIRST PROCESS01994842704731613422465761609  RET IS FANKE RET IS FANKE ACTUAL .63766187402)2+04 .35575341563764E338418953653712E+p2	.1202974245 1.000000000000000000000000000000000000	.1202714190 1.0607000000 YS(J.D.= 2444550, DEVIATION .6039652259*52*03 .2658301442362403 .2939129327542403	(DAYS)  15478)  KM  KM  KM  KM  KM  KM  KM/  KM/  KM/	DRIGINALI PAGE IS OF POOR QUALITY
FIRST FO	PROCESS = 1 PROCES	7.0395608269 1.300103000  FIRST PROCES NOT FIRST PROCES00195468270431619452465761609  JET IS FANKE R FOR THE EPHEMERIS ACTUAL .637661874023E+03 .240843345784E+0341895365312E+p2866833742451E+01551091501194E+01	.1202974245 1.000000000000000000000000000000000000	.1202714190 1.0607000000 YS(J.D.= 2444550. DFVIATION .6439652259752-03 .2658301442302-03 .293812932754E-03 .7959797517297-04 .216529214754E-04 .965913633A7.75-09	CDAYS)  E5478)  KM  KM  KM/SEC  KM/SEC  (H/SEC	DRIGINALI PAGE IS OR POOR QUALITY
FIDOT SEGONS THITTAL S THOUST CONF S CLOCK FIRST FO	PONCESC = 1 PROCESC = 1 PROCESC = 1 PROCESC = 1 PACHITUDE 1 INGLE (DEG) 1 NGLE (DEG) 2 PHEHEDIS PLAN 2 VA 4 VA 5 VA 5 VA 5 VA 5 VA 6 VA 7 VA 7 VA 7 VA 8 ELEMENTS FO	7.0 T99608269 1.0 C01030030  F THEUST PROCESS NOT FIRST PROCESS01954639704731619422465761609  IET IS FACKE IR FOR THE EPHEMERIS ACTUAL .63766187402)E+04 .3557503156472450 .241895365741E+03 .2418953657312E+p28668733742451E+01551091501194E+01  IR THE EPHEMERIS PLAN ACTUAL	.1202974245 1.000000000000000000000000000000000000	.1202714190 1.0607000000  YS(J.N.= 2444550,	(DAYS)  Y5478)  KM  KM  KM  KM/SEC  KM/SEC  (M/SEC)  (44550.15478)	DRIGINALI PAGE IS OF POOR QUALITY
FIOCH SEGONS THITTAL V THOUST CONF 1. CLOCK FIRST FC	POOCESC = 1 PROCESC = 1 PROCES	7.0395608269 1.30010300  FIRST PROCESS -0019546827 -019546827 -0243161942 -02465761609  IET IS FMCKE R FOR THE EPHEMERIS ACTUAL -63765187402020+09 -3557563136472493 -413953467312E402 -8668733742451E+01 -551091501194E+01  OR THE EPHEMERIS PLAN ACTUAL -371812743589E+09	.1202974245 1.000000000000000000000000000000000000	.1202714190 1.0607000000  YS(J.O.= 2444550.	CDAYS)  E5478)  KM  KM  KM/SEC  KM/SEC  (H/SEC	DRIGINAL PAGE IS DRIGINAL PAGE IS DRIGINAL PAGE
FIDOT SEGONS THITTAL S THOUST CONF S CLOCK FIRST FO	POPCESC = 1 PROCESC = 1 PROCESC = 1 PROCESC = 1 PAGNITUDE 1 INGLE (DEG) 1 NGLE (DEG) 1 NGLE (DEG) 2 PHEHEPIS PLAN 2 VY 2 VY 3 VY 3 VY 4 VY 4 VY 5 VY 5 VY 5 VY 5 VY 6 VY 7 VY 7 VY 8 ELEMENTS FO	7.0395608269 1.300103000  FIRST PROCESS -0019546327 -0245761609  IET IS FANKE R FOR THE EPHEMERIS ACTUAL .637661874023E+03 -041395365312E+02 -086683742451E+01 -0561091501194E+01  OR THE EPHEMERIS PLAN ACTUAL .371812743589E+09	.1202974245 1.000000000000000000000000000000000000	.1202714190 1.0607000000  YS(J.O.= 2444550. DEVIATION .6039652259752-03 .2658301442362-03 .2939123327542-04 .2165292147542-04 .965913633A7.F-03  00	(DAYS)  15478)  KM  KM  KM/SEC  (M/SEC  (M/SEC)  (44550.15478)	DRIGINALI PAGE IS DRIGINALI PAGE IS DRIGINALI PAGE IS
FIRST FO	PONCESC = 1 PROCESC = 1 PROCESC = 1 PROCESC = 1 PACHITUDE 1 INGLE (DEG) 1 NGLE (DEG) 1 STATE NECTO 2 V 2 V 3 V 4 V 4 V 5 V 5 V 5 V 5 V 6 V 7 V 7 V 7 V 7 V 7 V 8 ELEMENTS FO 1 1100	7.0793608269 1.070303030  F THPUST PROCESS NOT PROCESS	.1202974245 1.000000000000000000000000000000000000	.1202714190 1.000000000 YS(J.D.= 2444550. DEVIATION. 639652259752-03 .2658301442362-03 .293912932754-03 .795979761729-04 .2165292147542-04 .965913633A7.**-03 .000 6AYS(J.D.= 24 .0EVIATION. .461688936043E-04 .0000046	(DAYS)  X5478)  KM  KM  KM/SEC  KM/SEC  (M/SEC  (M/SEC	DRIGINALI PAGE IS DRIGINALI PAGE IS DRIGINALI PAGE IS
FIRST FO	POPCESC = 1 PROCESC = 1 PROCESC = 1 PROCESC = 1 PAGNITUDE 1 INGLE (DEG) 1 NGLE (DEG) 1 NGLE (DEG) 2 PHEHEPIS PLAN 2 VY 2 VY 3 VY 3 VY 4 VY 4 VY 5 VY 5 VY 5 VY 5 VY 6 VY 7 VY 7 VY 8 ELEMENTS FO	7.0395608269 1.300103000  FIRST PROCESS -0019546327 -0245761609  IET IS FANKE R FOR THE EPHEMERIS ACTUAL .637661874023E+03 .945764503 -41395365312E+02 -41395365312E+02 -551091501194E+01 DR THE EPHEMERIS PLAN ACTUAL .371812743589E+09 .4470423	.1202974245 1.000000000000000000000000000000000000	.1202714190 1.0607000000  YS(J.O.= 2444550. DEVIATION .6039652259752-03 .2658301442362-03 .2939123327542-04 .2165292147542-04 .965913633A7.F-03  00	(DAYS)  15478)  KM  KM  KM/SEC  (M/SEC  (M/SEC)  (44550.15478)	DEJGINALI PAGE IS OF POOR QUALITY

			GUIDANCE EV	CYCLE NUMBER 1 Ent number 1 Op Guidance event		
<del>+</del>	<u> </u>	*****	*********	***********	*****	*******
	SUIDANCE EVENT TIME	2444527.66473 47				
المراجع	DESIGNATED TARGET TI		- 591,50000 DAYS FPO	H LAUNCH		
	OURATION OF THE GUID	ANCE TPAJECTORY IS	26.49300 DAYS			• . • . •
		TPAJECTORY TIME = 567				manda and a second of the seco
		ACTUAL .1449409533; #+09	PEFERENCE .141936714399E+99	DEVIATION	0.6. 24	
		-1419479535 FFU9	.969736907210E+06	.419392983818E+ .436389266968E+		
		**************************************	.7J1565979457±+06	114959823155E+		
	VX	2889782538345+92	2889980619505+02	.197981458314E-		
	vv	• 363058701493E+01	.36200833557dc+01	2503659153625-		
	y7	1330973749475+81	1330277412835+01	6963355968785-		•
	S/C MASS	1493.55679	1493.42647	.130	32 KG	•
- 1 i						
	ESTIMATED S/C STATE	VECTOP FROM SIMULATED				
		FSTTMATE	ACTUAL	DEVIATION	•	
	X	1415449337415+09				and the second s
	a tanàna ao amin'ny faritr'i Nord-Maria	.7687338153456+08	.3687305461372+88	.268907352173F+	■ 1	
	<b>7</b>	• 101553792344E+08	•30155.44+3475E+18	651133414309E+		
7.0	VV	2889743482ú9E+92	2889782638642+02 .363353701493E+01	.391559655495E+ .435837778479E-		
	V7	.363102235267E+11 1331240252465+01	1330973748435-01			
		1493.42647			35 - KG	
					<del></del>	
		PLANET CAPTESTAN STAT			000 DAYS(J.D.= 24445	553.15478)
	و المساحد عامد	FRITMATE	ACTUAL	DEVIATION		• 5
	ing a samula sa	.6379632403092+18	.637961374020E+0::	.176528831387E+ .360528486729E+		
		.95575447]972E+08 243894]42362E+08	2408833457843+01			
	* vx	4139532639J3E+12	418953565312E+02	-301404527407E-		
	ν̈́ν	866844591648E+01	8668337424515+01	1084919755396-		^ ^
	v2		5510915011945+01			
		122222				ORIGINAL OF POOR
	WEPLERIAN ELEMENTS F	OR THE EPHEMERIS PLAN	NET FVALUATED AT 593.	50000 DAYS(J.D.=	2444550.15478)	IGINA1 POOR
				DEVIATION		오月
	SH1 TXIS	.3318186794405+07	.3318127435895+33			2 ₹
	i de la companya de	. 4470349	.9473023	.00006		27 <u>28</u>
1.194	TNO	11.9500822	_ 11.9500946			S 44
	. None	334.1999469	334.2001899	00024		$\approx$
	APSIS	185.0001544	185.9998749	.03028		<b>₹ %</b>
	MEAN ANO-	351.8952918	351.0950763-		55 DEG	PAGE QUALIT
						片形
						H
	والمار المستشرفين بواوستشبين سواوس المستشرابين	and the second section of the second section in the case of the second section in the second section is the second section in the section	de la company de			
	والمراجعة الموسستين ساوت المنظوسات	annones automorphis de le vera annot parable na froit e ant e este e este e	to the second se		•	R BAGE IS

```
ESTIMATED TRAJECTORY COMOTTIONS FOR NONLINEAR TARGETING
   ITERATION NUMBER 1
  TPAJECTORY STATE AT 593.50000 DAYS(J.D.= 2444550.15478)
                                              REFERENCE
                                                                  DEVIATION
                           FETTMATE
                         .90325*023312F+J4
                                          -.3J267183G177E+C3
                                                               .101352721293E+05
                         .113F77314326E+75 -.235964598179E+C3
                                                               ·1154299603085+05
                        -. 324792625213E+04
                                           -. 184006249666E+63
                                                              -.3053920002465+04
                   VX
                         .235209349651F+J1
                                            .204895C1893+F+C1
                                                               .374330717028E-02
                                                                                 KM/SEC
                         .195796943911E+01
                                            .195337447944E+01
                                                               .459495966794E-02
                                                                                 KM/SEC
                   VY
                                            .114062287871E+C1
                         .114°64733579E+01
                                                               .250270753455E-04
                                                                                 KH/SEC
                               1443.42747
                                                  1443.42529
                                                                          .00209
                                                                                 KG
  TARRET VARIABLES
                           ESTIMATE
                                               PEFERENCE
                                                                  DEVIATION
                         .98326J029912E+34 -.302671839177E+43
                                                               .1013527212931+05 KM
                         .113470314326E+05 -.235964598179E+03
                                                              .115429960308E+05 KM
                        +.3247926252172+04 +.1d40062496652+93 -.306392000246E+04
   DUADRATTS EPROP FUNCTION TO HEASURE RATE OF SONVERSENCE
 .... 9 = .392563366854E+02 FOR ITERATION NUMBER 1
   PHY MATPIX OVER TRAJECTORY ARC 567.01000 TO 597.50000 DAYS
         .175*77276255E+C1
                            +14F2421253575+CJ
                                                .392303521171E-J1
                                                                  .2*32573625385+07
                                                                                     .13[71483o54SE+36
                                                                                                         .349349398543E+05
                            .132438203569E+01
         .143331356170F+03
                                                .413119213601E-01
                                                                   .130136073461E+C6
                                                                                      .23245232C155E+37
                                                                                                         .38183737029JE+05
        - .422877432131F-01
                            .339266979708E-C1 --- .904311397564E+GG
                                                                  -.365412239169E+05 ----373866163328E+35
                                                                                                         -220439365243E+67 --
         .5337156976767-07
                             .154562837197E-E6
                                               .41 33 872252736-07
                                                                   .134205427501E+01
                                                                                      .295450001651E+00
                                                                                                         .5434714423326-61
  77
         .1531417037775-06
                             .5595534116115-07
                                               .473145654482E-07
                                                                   .208515688934E+00
                                                                                      .109238119162E+J1
                                                                                                         .651112345273E-01
         .-41414113729F-C7
                             .460J75315852E-07 -.952715545161E-07
                                                                   .559815718946E-01
                                                                                      .643104134561E-31
                                                                                                          .871839216985E+68
  THETA MATRIX OVER TRAJECTORY ARE 567.31000 TO 593.50000 DAYS
... TALL FLENEUTS ARE THE TRITEPHAL UNITS!
           COME MIGLE
                              CLOCK ANGLE
                                                  CONE ANGLE
                                                                     BLOCK ANGLE
         .624361624947E+GF
                           -.9351+7117595E+GF *.161735665742E+05 -.578848952196E+05
        -. 452590138/195+06
                             .1427511593805+05 -.50258002693+6+06
                                                                   .399773833626E+04
         .4159771264645455
                             .3974203617535+06
                                               .5623850531655+05
                                                                   .20115575c524E+C6
        -. 497408182701E-02
                           -.476838119385E-C1
                                               .153954139583E+00 -.556730176795E-01
        -. 4-15597342022+00
                            -948945138971E-02 -.509501771351E+00- .330389125042E-02-
                            .198547944772E+00 .51637835081'E-01 .197853332443E+00
         .644332174256E-F2
   ETA MATPIX AT THE TARGET POTHT
   KALL SLEHENTS APE IN INTERNAL UNITSE
              Υ .
                                                                                                               ٧Z
                            TOTAL
  TARGET/CONTROL SENSITIVITY MATRIX( 3 4 4)
   (ALL ELEMENTS ARE IN INTERNAL UNITS)
           CONE AMOLE
                            --985147117595E+05 .161786665347E+96 --578648962196E+05
         .52 -1615249475+65
         +.352523178719E+t6 .142751153780E+05 -.582504026934E+06 .399770833626E+04
         .4159331264645+65
                           .39342:3617535+06 .5623950501655+05 .201155750524E+06-
  GUIDANCE MATRIX( 4 y 3) FOR NONLINEAR GUIDANCE CORRECTION
  (ALL FLEATHTS ARE IN INTERNAL UNITS)
                                                                                                                 Œ
              -.4419784429582-05 -.1548219132112-05 -.1039909997845-05
CONE ANGLE
PLOCK ANGLE
              -. 2324137265935-05
                                  #161749358134F-07
                                                     .194327412083E-05
CONE ANGLE
               .748554203016E-05 .639092605022E-06
                                                     .19111:526199E-05
CLOCK BUSLE
              -.723551722215E-36 -.456463868694E-07
                                                     .8518565543675+36
  ESTIMATED CONTROL COPRECTION FOR ITERATION IN INTERNAL UNITS
                         OLD CONTROLS
                                                UPDATES
                                                                 NEW CONTROLS
         CONE ANGLE
                         . 262916398520E+01
                                            .593273163172=+01
                                                               .268849130152E+01--
```

TLOCK ANGLE

SOME ANGLE

.139626340160E+91

.7218952731435-02

.2738076765142-81 -.7/36948335756-81

.140348235477E+01

.26670748179E+01

```
ESTIMATED TPA JECTOPY CONDITIONS FOR MONLTNEAR TARGETING
   S PERMIN HOTTARATT
   TRAJECTOPY STATE AT 597.50.00 DAYS(J.O.= 2444550.15478)
                            ESTIMATE
                                                REFERENCE
                                                                   DEVIATION
                          .248241891074E+94
                                            -. 3,26718301775+03
                                                                .278509374092E+84 KM
                         .505576713603E+03 -.235964598179E+03
                                                                .741573611782E+03 KM
                          .558642783165E+03 -.184006243666E+03
                                                                .742649032831E+03 KM
                         .204146 194347E+41
                                            . 204895018934E+01 -. 746624592415E-02 KM/SEC ---
                    VY
                         *1959744425725+31
                                             .19F337447944E+01
                                                                .163699462779±-81 KM/SEC
                   W7
                          .114174854087E+01
                                             .1140622878715+01
                                                                .725702117826E-03 KM/SEC
             S/C MASS
                                1443.42653
                                                   1443.42539 .
                                                                           .00124 KG .....
   TAPGET VAPIABLES
                            ESTIMATE ...
                                                PEFEDENCE
                                                             .... DEVIATION
                          .248241891074E+04 -.302671873177E+03 .278509074092E+04 KM
                         .505536013603E+03 -.235964598179E+03 .741500611782E+03 KM
                         .558642783165E+93 -.1849062496662+03 .742649632831E+03 KM
   QUARRATIC ERPOR FUNCTION TO MEASURE PATE OF CONVERGENCE
     0 = .392563366854E+02 FOR TTEPATION NUMBER 1
             .141729293854E+01 FOP ITERATION NUMBER 2
   PHY MATRIX OVER TRAJECTORY AON 567.01000 TO 593.50000 DAYS
                                                      2
          .135575355739E+C1
                             .145321435478E+00
                                                 .392367574244E-01 .233275943915E+t7 .136816415531E+06
                                                                                                           .349357796567E+05
                                                 .414336864076E+61 - .130307374767E+06 - ....2324513356+4E+37
         $ 14473534F 2056+31
                             .1J2453731742E+01
                                                                                                           .382132822531E+35 --
         .422F597373F7E-01
                             .397142357982=-61
                                                .90+145501431E+09
                                                                    .365717393500E+05 .373263344569E+05 .104270549772E+01 .205591099993E+30
                                                                                                           .220442770545E+G7
   VY
          .5323460972305-67
                             .1541729035135-06
                                                 .414023046457E-07
                                                                                                           .543619725692E-01
   EY.
         .159370739546=-66
                             .563270013590E-07 .473775048992E-07
                                                                  .208691808792E+00 __.109283232066E+01
                                                                                                           .651339275616E-C1
   ¥7
         . 6+1415274955E-C7
                             .459215602582E-C7 -.952991181397E-07
                                                                    .559907266965E-01 .642984773359E-01
                                                                                                           .071922274344E+00
   THETA-MATRIX OVER THATERTORY ARG 567.01000 TO 593.50000 DAYS --
   TALL SLEWFUTS ADE IN INTERNAL UNITS)
                                                                      CLOCK ANGLE
           COME AMBLE
                              CLUCK ANGLE
                                                   CONE ANGLE
        .1171938172025+06
                            --854963481192E+85 128813873296F+86 --656523257663E+85
        -. #47673910336F+C6 .116174905817F+U5 -.5151006144425+U6
                                                                  .2318291591022+04
                            .351719079537F+06' .415916917677E+05
                                                                    .234326922739£+06
         . 437705753347F+E5
       --- .1939776017065-61
                            -.41383o777692E-C1----.118529638005E+00----.646086396764E-01-
                             .734787117019E-02 -.524213312769E+00 .26J413780846E-02
   WY -. +72953701583E+80
                             .177490758030E+00 .364194383326E-01 .231465353931E+00
         -1142148217L=E-01
   ETA MATRIX AT THE TROOFT POTNT
   TALL PERMETTS APP IN INTERNAL UNTTS)
             X
          .100300626006E+01
         ?..
                            .190000000000E+01 0.
                                                                                       ů.
                                                .10300C0033000E+01 0.
   TAPRET/CONTROL SENSITIVETY: MATPIX( 3 X 4).
  (ALL ELEMENTS FOE IN INTERNAL UNITS)
                               CLOCK ANGLE
                                                  CONE ANGLE
                                               .128713079296E+06 -.656523257663E+05
          .117193#17732F+Co -. 854956401192E+C5
        -.3426936109366+66 .1061749058175+85 -.5151006144422+86 .2818291591025+84
         .497385761947E+05
                             .351711079537E+06 .415816917632E+05 .234326922739E+06
  EUTOANCE MATRIXE & X 7) FOR NONLINEAR GUIDANCE CORRECTION
   (ALL SUFFERITE ARE IN INTERNAL UNITS)
              -.97005A2A52A3E-05 -.26232149F051E-05 -.242372719762E+05
COME ANGLE
CLOCK ANGLE
               .106407923672E-u5 .720968568247E-06 .223057230509E-05
CONE ANGLE
               .15578882C007E-94 .275436523740E-05
                                                      .4015064593312-05
CLOCK-ANGLE-
              --- 239719633334E-95 -- 353354444316E-06
                                                     .711234166639E-G6
   ESTIMATED CONTROL COPRECTION FOR ITERATION 2 IN INTERNAL UNITS
            OLD CONTROLS --- NEW CONTROLS --
         COME ANGLE
                          .768649133152E+91 .307620976339E-01 .271925339915E+01
                                                                -139862447975E+01
         CLOCK ANGLE
                         +149743235473E+91 --489747457483E-02
                         -2556777766176E+01 --489520450865E=01
         COME ANGLE
                                                                .261179543669E+B1
         CLOCK ANGLE
                         .1372234665425+01 .641075755304E-02 .137864522298E+01
```

```
CONVERGENCE IN THE NUMBERGAD GUIDANCE ALGORITHM AFTER 3 TTERATIONS WITH QUE .2080E-08
  ESTIMATED TRAJECTORY CONDITIONS FOR NONLINEAR TARGETING
  ITERATION NUMBER 3
  TRAJECTORY STATE AT 897.50303 0075(J.D.= 2444550.15478)
                           ESTTMATE
                                                PEFERENCE
                                                                    DEVISION:
                         .684722876733E+13 -.3026718301777+03
                                                                 .986894666910E+03 KM
                         *336164455+14F+02 . -. 235964598179E+03
                                                                 .274581043720E+03 KM
                         .316740513J09E+03 -.184006249666E+03
                                                                 .530752762675E+03 KM
                        ·?^3689583321F-01
                                            .234895u18934E+01 -.120543561295E+01 KM/SEC
                         .19811275+345F+01
                                            .195337447944E+01
                                                                .277530640057E-01 _ KM/SEC
                        ·114F95298650E+01
                                             .114962237871E+01
                                                                 .330107892957E-03 KM/SEC
            SIC HASS
                                                    1447.47539
                                                                            .03083 KG
  TARGET VARIABLES
                           ESTTHATE
                                                PEFEPENCE
                                                                    DEVIATION
                         .534222336733E+03 -.302671850177E+03
                                                                 .936894666910E+J3 KM
                         .386164455414E+J2 -.235964598179F+03
                                                                 .274581043720E+03 KM
                         -315746513009E+03 --194005249666E+03
                                                                 .500752762675E+03
 QUADPATIC FRAME FUNCTION TO MEASURE RATE OF CONVERGENCE
      0 = .3925533668F4E+02 FOP ITFPATION NUMBER 1
            *141729298954E+01 FOR ITERATION NUMBER 2
      0 = .200017465996E+00 FOR ITERATION NUMBER 3
 PHE MATPIX OVER TRAJECTORY APO 567.01993 TO 593.50000 DAYS
        .12F379F45734F+91
                            -1453441910375+60
                                                 .792764045459: -01
                                                                    .233287602+06E+07
                                                                                       ·136359137711E+36
                                                                                                             .3-9326012975E+35
        .14+49F072-75F+61
                            .1324566435322+61
                                                 -.414708403366E+01 --.130381703155E+06 -.232450495291E+37
                                                                                                              .382153948374E+35
        .42267966F135E-01
                            .795946754417E-01
                                                 .9641029333166+00
                                                                     .365273061225E+05
                                                                                       .3728901215116+05
                                                                                                             .2234437554J3E+E7
        .53237#555716E-07
                             .154216525917E-06
                                                 .414032164953E-07
                                                                     .104246256484E+01
                                                                                        .2356513927032+03
                                                                                                             .5-3577761324E-01
 41 --- . 159472167490F-L6
                            .567508334040E-C7 ...4739419138551-07 ....203765110231E+00 .....109279311542E+J1
                                                                                                              .651263120572E-01
        . 4414249543154-07
                             .458676797808E-07 -.9527806024758-07
                                                                     .559874339543E-01 .642803942582E-01
                                                                                                             .872036066172E+4C
- THETA MATRIX OVER TRAJECTORY ARC 567.31900 TO 593.50000 DAYS
  (ALL ELEMENTS APE IN INTERNAL UNITS)
          DON'T AMPLE
                               CLOCK ANGLE
                                                   MONE ANGLE
                                                                       PLOCK ANGLE
        .1372534542195+66 --- d19741443194E+G#
                                                 .105955773723E+06----.703C17348834E+05 --
       -. * 76193787741E-06
                            -112731337459E+05
                                                -.5214AC807154E+u6
                                                                     .1963@3636135E+64
                                                                                                                                 DRIGINAL
POOR O
        .55460002163656+65
                            .329J59502939E+V5
                                                 .326037923346E+35
                                                                     .2547A4562267E+06
                           -. 190634174873E-C1
       - 73 738 + 376924 = +01
                                                 .955154049472E-01 --.692824376515E-G1 ---
                                                                                                                                 POOR
 VY
       -- 4575592519415+63
                            .753338367852E-C2
                                                -.531937947658E+10
                                                                     .165717199885E-02
        .15*531356268c-01
                            .156031883319E+CO
                                                 ·270518064233F-01
                                                                     .252166435066E+00
 ETA MATPIY AT THE TAPGET POTNT
  TALL ELEMPHIS ARE IN THIERNEL UNITS!
                                                                                                                                L PAGE
QUALIT
        .10000ccocecoE+61 d.
                            .13000030000C9E+C1 0.
                                                 .1000000G000E+01 0.
 TAPGETYFOUTPOL SENSITIVITY MATRIX( . 3 X 4)
  (ALL ELEMENTS APE IN INTERNAL UNITS)
          CONE ANGLE
                              CLOCK ANGLE
                                                  CONE ANGLE
                                                                       CLOCK ANGLE
         .137555454219E+86 -.819241447194E+45
                                                 -105955773723E+06 -- 703C17348834E+05
        -,43619>797240E+06-----112781997459E+05 --.571430807154E+06----19300d636135E+04-
        .585600216305E+05 .329059602999E+06
                                                 .326337923846E+05 .254784562267E+06
```

```
GUTDANCE MATRIXE 4 X 71 FOR MONLINEAR GUIDANCE CORRECTION
   (ALL FLEMENTS ARE IN INTERNAL UNITS)
COME ANGLE -
                                   -.679303241947E-05
                                                      -.714526572348E-05
                                    .273019312982E-35
                                                       .532862430016E-05
CLOCK ANGLE
                .134764.16960E-04
CONE ANGLE
                -4541151044137-04
                                    .822034048695E-05
                                                       .115624420496=-04
CLOCK SHOLE
                -. 157328871812E-04
                                   -.313179897596E-05 -.2734678711715-05
   ESTIMATED CONTROL COPRECTION FOR ITERATION
                                              3 IN INTERNAL UNITS
                           OLD CONTROLS!
                                                   UPDATES
                                                                     NEW CONTROLS
                                             .3311345842725-01
                                                                  .2752366857585+01
          CONE MAGLE
                          .2719253349155+81
          PLOCK AHOLE
                          .139852447975E+01 -.157119288234E-0:
                                                                  .1381912550926+01
          CONE ANGLE
                          .2611755436695+01 -.528635892385-01
                                                                  .255889164746E+01
                          .137664522298E+01 .187729728384E-01
          CLOCK ANGLE
                                                                  .139741819581E+01
   COMMANDED THRUST CONTROL CORPECTIONS
      THRUST CONTROL THRUST CONTROL THRUST CONTROL
                                                           COMMANDED
                       PHASE NUMBER
                                           TYPE
      CHANGE NUMBER
                                                             CHANGE
                                       COME ANGLE
                                                             7.059005 DEGS
                            9
                                       CLOCK ANGLE
                                                              -.822243 DEGS
                            9
                                       CONE APGLE
                                                            -10.267697 DEGS
                           10
                           10 -
                                       CLOCK ANGLE
                                                              2.043465 DEGS
   ACTUAL THRUST CONTPOLS AFTER CORPECTION
       THOUST THOUST PHASE THOUST PHASE THRUST PHASE THRUST PHASE THRUST PHASE THRUST PHASE
       PHASE
                                                                                      CLOCK PATE
                  END TIME
                              THROTTLING .
                                             CONE ANGLE
                                                          CLOCK ANGLE
                                                                         CONE RATE
       NIJAGES
                  (DAYS)
                                               (DEG)
                                                             (DEG)
                                                                         (DEG/SEC)
                                                                                       (DEG/SEC)
                                                           272.212085 ---
                                                                           0.00.000
                                                                                         0.000000
           4
                 567.000000 ----- 1.354491 -
                                             129.675246 ---
                                             157.696637
                 577.000000
                                  .999718
                                                            79.186321
                                                                           0.000000
                                                                                         0.000000
                                                                                         0.0000330
                 557. 050000
                                  .995981
                                             140.636030
                                                            80.061165
                                                                           0.000000
                 600.000000
                                 9.000000
                                               0.000000
                                                             0.000000
                                                                           0.000000
                                                                                         0.000000
          11
                                                                                                              OF POOR QUALITY
```

		MONTE CARLO MISSION	SUMMARY FOR CYCLE	1		
	********		************	************	**********	**********
CP TTHE E30 THTS	S FYCLE = 7.39400 SEC					
	SED TO THIS POINT IN EXEC	CUTION * . 8.77003 REG			***	
		. Brewer en eine in eine eine				
SVC STATE VECTO	R AT TPAJENTNOV TIME = 59 ACTUAL	93.50000 DAYS(J.D.= 2 PEFERENCE				
	X •537993677777E+0			KM		
	Y					
in the first of the second	7240910912142E+95		3229553853875+04		*** {	
	VY 1986056733935+09					
	V7 436700445979E+01					** * **********
CAPPLED S/C-SEP	0.00.00					
	- ACTUAL	REFERENCE -	DEVIATION			
S/C MASS	1443.65190			KG		•
TANGET VANTAGLES						
And And India.	ACTUAL	PEFERENCE	DEVIATION	The second secon		****
¥	C.	302671830177F+03	-302671830177F+03	KM		
		2359645981792+03-	235964598179E+03	KH	eren i e e	*-" book
<b>.</b>		184006249666E+03	.184006249666E+03	KN		
in the field of the control of the c						
TOTAL DELTA-VELO	CITY MAGNITHOS FOR IMPUL	SIVE MANEUVERS= 0.	KH/SE	.c.		
TOTAL DELTA-VEL	TCITY MAGNITUDE FOR IMPUL	SIVE MANEUVERS= 0	MALE CONTRACTOR CONTRACTOR	ic		
TOTAL DELTA-VEL	TCITY MAGNITHOS FOR IMPUL	SIVE MANEUVERS= 0	KH/SE	ic		· · · · · · · · · · · · · · · · · · ·
TOTAL DELTA-VEL	TELTY MAGNITHOF FOR IMPUL	SIVE MANEUVERS= 0.	KH/SE	:C		• • • • • • • • • • • • • • • • • • • •
TOTAL DELTA-VEL	TCTTY MAGNITHOF FOR IMPUL	SIVE MANEUVERS= 0.	KH/SE			
TOTAL DELTA-VEL	TCTTY MAGNITHOF FOR IMPUL	SIVE MANEUVERS= 0.	KH/SE	· · · · · · · · · · · · · · · · · · ·		
TOTAL DELTA-VEL	TCTTY MAGNITHOF FOR IMPUL	SIVE MANEUVERS= 0.	KH/SE	· · · · · · · · · · · · · · · · · · ·		
TOTAL DELTA-VEL	TCTTY MAGNITHOF FOR IMPUL	SIVE MANEUVERS= 0.	KH/SE	· · · · · · · · · · · · · · · · · · ·		
TOTAL DELTA-VEL	TCITY MAGNITHOS FOR IMPU	SIVE MANEUVERS= 0.	KH/SE	ic		
TOTAL DELTA-VEL	CCITY MAGNITHUS FOR IMPUL	SIVE MANEUVERS= 0.	KH/SE			
TOTAL DELTA-VEL	TCTTV MAGNITHOF FOR IMPU	SIVE MANEUVERS= 0.	KH/SE	· · · · · · · · · · · · · · · · · · ·		
TOTAL DELTA-VEL	TOTAL MAGNITHOS FOR IMPU	SIVE MANEUVERS= 0.	KH/SE	ic		
TOTAL DELTA-VEL	CITY MAGNITHOS FOR IMPU	SIVE MANEUVERS= 0.	KH/SE			
TOTAL DELTA-VEL	CITY MAGNITHOS FOR IMPU	SIVE MANEUVERS= 0.	KH/SE	.c		
TOTAL DELTA-VEL	CITY MAGNITHOS FOR IMPU	SIVE MANEUVERS= 0.	KH/SE	.c		
TOTAL DELTA-VEL	CITY MAGNITHOF FOR IMPU	SIVE MANEUVERS= 0.	KH/SE			
TOTAL DELTA-VEL	TOTAL MAGNITUDE FOR IMPU	SIVE MANEUVERS= 0.	KH/SE	iC -		
TOTAL DELTA-VEL	CITY MAGNITHOS FOR IMPU	SIVE MANEUVERS= 0.	KH/SE	iC		
TOTAL DELTA-VEL	CITY MAGNITHOF FOR IMPU	SIVE MANEUVERS= 0.	KH/SE			
TOTAL DELTA-VEL	CITY MAGNITHOF FOR IMPU	SIVE MANEUVERS= 0.	KH/SE			
TOTAL DELTA-VEL	CITY MAGNITHOS FOR IMPU.	SIVE MANEUVERS= 0.	KH/SE	iC		
TOTAL DELTA-VEL	CITY MAGNITHOF FOR IMPU	SIVE MANEUVERS= 0.	KH/SE			

#### 3.2.4 REFSEP

The REFSEP sample case provides detailed trajectory print for the Encke flyby mission. A run such as this is likely to be made after the reference trajectory has been determined in TOPSEP and prior to a GODSEP error analysis run. Of particular importance to the GODSEP user is the tracking information which is available over any desired trajectory arc and from which a measurement schedule can be made. The remaining output provides a detailed description of the integration process and the changing geometric relationships among the S/C and the bodies considered.

On the first page of output is a listing of the \$TRAJ namelist describing the Encke flyby mission. Except for two of the variables, KARDS and ELVMIN, the input is standard to all the MAPSEP modes.

(Other REFSEP peculiar input is described in Section 2.1, Page 12-B of this manual.) The value of KARDS indicates the number of formatted print schedule cards which are to be read during the execution of the REFSEP run. Images of cards (KARDS = 3) may be found immediately after the \$TRAJ namelist on the first page. These cards specify the start times, stop times, and time increments for the various print codes. Although many print blocks are scheduled and appear in the sample case output, only one representative print block is included here to illustrate REFSEP's output. The scheduled time is 580 days, at which time the print block includes all possible print options (print code = 1123) which are:

- 1) nominal trajectory print,
- 2) primary body data,

- 3) target data, and
- 4) tracking data.

Most of the output for each of these options is self-explanatory; however, the tracking calculations deserve additional clarification. The approximate rise and set times of the S/C with respect to the tracking stations (or of the target body with respect to the astronomical observatory) are estimated from the geometry occurring at the scheduled print time. The underlying assumption for these calculations is that the S/C moves very slowly across the celestial sphere. (Hence, these calculations are invalid for a S/C in a nearearth trajectory.) The printed rise and set times are always within one day (± 24 hours) of the scheduled print time. These times refer to the time when the S/C rises above or falls below the specified minimum elevation angle (ELVMIN). If the S/C never rises or never sets during the 48-hour span at a particular station, the message "NEVER VISIBLE" or "ALWAYS VISIBLE" is displayed for that station.

현근 아이들은 그림은 중인하다고 하다.						
i jednje dogodina koje jednika koje koje koje koje koje koje koje koje	and the second second		The second second		 	
SINE = 21.63. 0.65. 21.65.						
514E(11) = 0.64.					• •	
Ober = de la casa de l						
<b>= 3.10.</b>						
M = 3+	Carlo Ca				 A	
e=1%			•			
#±55 = 1988.0.		treparence of				
ate = -5.92110445E3,		Table Second			 	•
15/1464063.		DEKGINAI DE POOR				
\$1749+72534						
. 4456773+	<u></u>	FOOR			 room year on each	<del>-</del>
·sr51u7n3·		6 Pi	•			
· #3123375+		. <b>82</b>				
NCH = 1443957.654709		<b>M D</b>				- · ·
4,=543.4437+ ISIUM=1+						1.
geub# = a la l		<b>D</b> .				
954. 93+ 1. 9					 	
145. 1. 108. 1.224.6.546.					•	
657 1 77 657 254						
. 470. 1. 10. 85. 314, 264. 1540.	فالمحارب فالمراكب والمنافية			1 m 1 m 1 m 1 m	 	
5651120.501.668.742.540		U PAGE IS	•			
5571.355.130.432.272.53.0*0		₹ 55				
.5771150.64.AU5 . G	en e	- <b>,</b> 0			 	
.,567.,1.,162.,77.59.5*0.,						
64400 6440 6						
#JE = 4.	and the second second second					· <del>-</del>
۱۳٫5=3•						
.cl=hlmv.	•					
		tale of the second				
60.0 5.0 1012			and the same of		 	
.0 600.0 50.0 23						
.0 600.0 5.0 1123						
					 in the same of the	a proper support or single-service

INITIAL FA								
	CH (FEFERENCE CATE)							
JLL14	DATE 2443956.8547800	304						
	AP PATE 1979 MAQ 24							
			TRITTUE FROCH					
	AF CATE 1979 MFF 24		es cc.n cere		•			
	FND FFOCE 593.498700000							
	. DATE 2444556.1534769			4				
	IP TATE 1980 NOV 6		.67:4 SECS					
TRITIAL ST		COCC DAYS AFTER THE		CH	The State of the S	a farmer and the second	والمتعارض المستعرض والمستعرض	
PCSTI	X FCN592117445000000	301	Y 4698CG000E+04		Z • 43/ 0/ 3000000		P#GNITUDE -6561932936034	
VFLC			C783C1000E+01	- 7	174047200000E 33123375J0000E	₩194. 404	-1321683536739	
SEFS MASS		18.CCCGCCGGCC KG	£10361000540T	7.0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	T • • • • • • • • • • • • • • • • • • •	-13616633464-436	
EXPÂUST VELICI		F. LIEGCCOOCO KF/SEC			•			
こくしょくてつてき ひとしこく	AT 4 A. 1.							
THELSTER FFFIC	LENCY	.640000000						•
FACIATION FEES	IENCY SUPE COEFFICIENT -	-1.00000000						
<del>eren</del> e si is y _e ts siii		والمعاودينيونيين والمراكب والأجاكر السوامي		. ————			<del></del>	
LIST OF CO	EVITATING ECOTES						•	
- ELETI		<u> </u>						
FACE	The second secon							
ta a sa a	ET TO ENEKE							
	يحم في المناب المستشوف أن أن أن المستشر	man land and and and and and and and and and						
INTEGRATIO	FIRE FACTOR LOSED							
FHESE BURGES	FRO (IMF THPCTTLING (GAY)	(CEG)	ICEG1 (1 C.CCG13C	)FG/SFG1	10EG/SEC) TH	RUSTERS		
	140.000000 1.00000		4.600330	0.00000	0.000.00	0.000000		
	201-000000 1.0m6000							·
4	470.000,70 1.000000		9.00000	G. CC0000	0.000000	0.000010		
\$	575.500000 1.00000		P.742600	0.00000	0.600060	202226	98	
	567.633509 1.355CCG				0.033000		<del></del>	
7	577.000.35 1.000000 567.000000 1.000000		(.018.60 7.59000	0.000000	0.003300	0.000000	<b>P</b> 93	
	- P60.000000 C.000000						PO	
		0.00000	9 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4.000400		44 40 40 6	SE	
ECCY PARAMETER	AND GRATTAL ELEPPATS HAVE E	ELEN FFAC-IN FOR ENC	KE AT JULIAN	DATE 244	4580.00000000	600	OR AL	
FI /451 SI	GTUS	GGGCCGGGE+G3 KM			and the second s	<del></del>		
	POPE .12200 PUTATTONAL CONSTANT .1200	0000CC0CE+04 KM					2.5	
FL/+ 1 55	AVIDATIONAL GONGIANT	00001C1CE-06 KM**3/S	EE ** I					
FLASET OF	F ANY	*		4 - Jan - Angerson St. Springer - Marie St. Marie - Ma			QUALITY	<del></del>
FLASET OF	117	e c.	DEGNAC				를 ^{(c}	
FLASET OF	THE SUPPLEMENT OF ME	G . E	0EG/JC	به به مستنده و مستحد مستند مستحد به	·	·		<b>!</b>
FLANET CE SENT-PAUC ECCENTRIC INCLINATI	- <b>10963342306690606+63</b> CE		CFG/JC					•
FLAPET OF SEPT-PAUS ECCENTRIS INCUIPATION ASCENTIAL CMEGA-T	.:F72CGC(GCCE+03 CF	. u •						
FLANET OF SENTERS FOCENTERS INCUINATE ASCENDING	.:F72C0C(GCCGE+07 CF	EG C.	OEC\JC					
FLAFFT CS SEMT-BAUG FCCCCUPGIT INCLIBATI ASCENCIAC CMFCA-T PESA SAC	.:F72CGC(GCCE+03 CF	EG C.	DECYTC	and the second decision of the second decisio	a e francisco mande e e	•		
FLAFFT OF SEMT-MAN FOCENTIAN INCLIMATI ASCENCIAN CMFCA-T MERN ANCO	**************************************	EG C.		nda i kan gama (akalan kan i i i i i i i i i i i i i i i i i i i	in the thirt considers, amendicalismos, give	. mark - anglessamps / contact has a single	and the same district physical area are interpretations.	
FLAFFT CS SEPT-PAUL FCCCCCIPGI INCLIPATI ASCENCING CMFCA-T PESA SAC DETAILEC	#FRINT FURNT TOHEGULF  1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	EG C. GOD DAYS IN INCREMEN	15 OF 5.0		CCCE NO. 101			<del></del>
FLANET CA SEMI-MAJU FCCENTIGIT INCUMATI ASCENTINE CMFGA-T MEAN ANCO DETAILED FFCP FFCP	.:F72COC(GCCVE+07 CE FFINT FVFNT TCHEGULF 0.00010 BAYS TO 60.01( 50.77010 DAYS TO 593.45	EG C. GOO DAYS IN INCREMEN B70 CAYS IN THCHEFEN	TS OF 5.0	000 CAYS	CODE NO. 2	3		
FLANET OF SEMT-BAIL FOCENIEST INCLINATI ASCENCING CMFGA-T MEAN ANCO DETAILED	.:F72COC(GCCVE+07 CE FFINT FVFNT TCHEGULF 0.00010 BAYS TO 60.01( 50.77010 DAYS TO 593.45	EG C. GOD DAYS IN INCREMEN	TS OF 5.0	000 CAYS	CODE NO. 2	3		

SAGE BELLETITIES   X	JEAR EECH CO DRAR EECH CO	BUNCH-	526.65478301 586.06966066 12.45876306	CONTOCL FHASE 6 FRESENT S/C FASS- 1462-20176727 FCHEF AVAILABLE 21.0000000	KG E	RIPARY BOLY SLN PHEMERIS BOLY ENCKE ARGET BODY ENCKE	
VILCOTY	S/C FELATIVE	FETATES	<b>X</b>	and figure (1998)	7	PAGNITUCE	
### ##################################	SUN PCS:	T-TCK	.10673568750378E+C9	.99112073584481E+08	.20015396436489E+	88 .148325643633396+09	
VELOCITY	VELO	CCITY	335093554842826+(2	997519C1086C385-02	252727157HEE64L+	01 .34/033796550105+02	
VELOCITY	CACTH FFC	TITCN	200260212602#6F+h#	- 22715680508167E+#8	243161866436489F+		
VELOCITY .## ## ## ## ## ## ## ## ## ## ## ## ##							
VILCOITY	ENCKE PCS1	TTICN	260389962814046+07	23797(733792505+07	13953833587063F+	375346491266626467	
FAIRST   COTY							
FAIRST CONT	SAC	ALICNS			• •	WACATTHEE	nelse con
### ### ### #### #####################				- 107076566131066-08	- 4470717676767676		
		EUC 1C 3					
INCIVITUAL FEFTLOFING ACCELEFATIONS  REFIT		SECCIOE				o .62455/5418314/6466	
######################################		-1 -20-7		ering de la companya	U•	Ü•	
######################################		FEFTUPFING					
######################################	EZFTH		.1CC81PC5875796E-C5	135776052134746-09	155909155636635-	09 .230015413115946-09	
	ENCHE			.435635156645228-22			
### FCSTTICN	FLANETIES FO	PHEEMEETDES					
VELCOTY				76706403076644640#	0	4887767555555105468	
*** VPLOCITY							
*** VELOCITY	FACRE FCC	TTICK	.165336787251926+69.		.294107797951955+	216276513_156166466	
CCNIC   CONTO   1.1673/07/9054/77+C9				7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7			
**************************************	CONTO POST CONTO VELO DELTA POST DELTA VELO	CC11A A11CP CC11A	.106737079054076+09 356606148204616+02 219145020658176+04 485106637210096-01		25139595767493E+ 59745165274091E+ 13312001917133E-	01	1
CSCLLATIRE CORTO GATA  CSCLLATIRE CORTO GATA  CSCLLATIRE CORTO # FLLTESE  PERIFCIRT #4850827625572428+C8			and the second s				
### CSCLLFTIPC CCPTG  ### ELLIPSE  #### FEPT-VFL VFCTCF				The second secon		to committee to the second contract of the se	
### CSCLLPTIPC CCNTG # FLLTPSF  ###################################	CCLLATTE (	CCATC GATA	on the constant of the constan			10.10 <u>.4</u> 40.0010.0000.000	
PEFIFCIAT VEGICO485082762552425+CE .130152129C74706+CA100711326677425+C7 .506204457774555+CE PEFIFOTA VEGICO167976537457665+C264224847447685+021425422963851816+C2 .678944110994925+C2  UNIT VECTOE DIPECTIONS P-466176324744556+0C .267113755277546+00158953851809456-01243364458249635+0094589198575486+00269334656900116+30243364458249635+0094589198575486+00269334656900116+30243364458249635+00345896196500 -977512573561345+002693365134556+00345897125114556+00345897125114556+00345897125114556+00345897125114556+002633588185440645-01263358818544066-01263358818544066-01263358818544066-0126358818544066-0126358818544066-0126358818544066-0126358818544066-0126358818544066-0126358818544066-0126358818544066-0126358818544066-0126358818544066-0126358818544066-0126358818544066-0126358818544066-0126358818544066-0126358818544066-0126358818544066-0126358881854406-0126358881854406-0126358881854406-0126358881854406-0126358881854406-0126358881854406-01263588881854406-012635888888888888888888888888888888888888						The same is a manufactured and applications of the same state of the same state of the same same same same same same same sam	
PERT-VEL VECTOR14797E43345766E+026424484744768E+02142542296381416402 668204120945E-01  P-4FCYCF 01FFCYINKS P-4FCYCF56617632474495E+00	CSCLLFTIFC	CCAIG + FLL	IFSF				
PERT-VEL VECTOR14797E4334576E±+C26422484744768E+O2142542296381=1E+C2 .67E94411099452E+C2  UNIT VECTOR DIPERTIONS P-VECTOR5E617E32474495E+OC .25711375527754E+OO18895385180945E-O1 9-VECTOR243644582463E+OO9448881945744E+OO2093465690011E+302093465690011E+307479467400272E-C119791188440FJJE+OO .97751257356134F+CD52657574527627450034520923752117E+OO71546214457429E+OO .668204120CRIRIF+OO18837712311455E+CO74324127824064E-O1  CCAIC ELFPFNIS	PEPIPCIAT VE	EGICO	48<062762572425+08	.13^152129C7470E+08	100711326677425+	C7 .5(620445777485F+07#	
P-4F(7CE,							
P-JECTCE5EE17E32474495E+0C		A TOPPTY AND	the state of the s	The same of the sa	ere de la companya de	encentre e un approximation described per la homographic described	
9-VECTCF24/39449724963E+0094589819757646E+002693465696011E+3074796167674796167676119791168640FJ3E+00 .97751297356134F+00				\$ SE7443766573616400	# 4C40678544.0.55	14	
N-VECTCF7679FC57CC0272E-C1							
**************************************						T F	
PCSITTE						u u	
VELCCITY957234C9311P22E+CC25335881854L06E-0374324137824064E-01  CCAIC ELFFATS. AFS						F3	
CCAIC ELFRENTS A MAN AND AND AND AND AND AND AND AND AND A							
	CENTE ELFAFI				AFS	A	

Expausi	I-LIBE CE SIGHT	10.438510412547 16.996565176040 .666417218809726+CC	CEG	:55557(35E+00	.36783874226665E+00	
CSCLLAT	TING CONTO DATA NET	TAPEET FCGY		er manerina i manerina	* * * * * <del>* * * * * * * * * * * * * * </del>	Januarium (- albanum ) aft. politi - e la pr e sa e sa es e, penale impulsos pre penilis, despui
OSCULAT	TING CONTO A HYPERE					
50r =	.72447 04101296740	5 F = .57516 5 T-4TH = .56464 1 TSGI = .59224	751473525E-01 019399791E+32	VCA = .35846	58861291±+05 3266227596+01	
FEE IPC	CTOP INT VECTOR FL VECTOR	.25085560476662F+C1 .51007645305060F+G5 .51007645305060E+C5 .25085560476P63E+C1	190930 190930	7340114786+01 (C4760263E+05 (C4760263E+05 (34011479E+01		.871765685612926+05
		F 54E-10 •11198396•16		NOCE .2858209E+02	APS MA .2941433E+634871529E+17	TA +2713168E+G3
1	TRACKTYC DATA		indication of the second section is	managam on months apamagan yang danagan	enter de la companya	tions of leaser is a six or reside an information or committee or six or six of special security.
FRAGE-N GELCENT GEGET LO ERST LO	NEL INCLUDED ANGLE TRIC ECLATOPIAL CEC ASCENSION CNOTTLEF	64.4918£1952770 101.91663£7430£9 56.419721£873£0 195.141311179695 66.717122711647 88.4241584£6048	CFG CFG CFG			
HINIMLE	ELEVATION ANGLE.		CEG		Marine and the second of the s	il, karin in la laman.
STATICA	eist	\$F1	FLEVATION	A; IMUTH	PANGE	FANGE FATE
	579.17954 579.62954 Neveo		1.84457 42.95567	356.03624 	.41698667914532E+08 41694527677929E+28 .417615E54022672+08	645716754541936+C1 665297617454556+01 62680266054666+01
ASTRCHO	PICAL CATA FOR THE	TAPGET CODY	an english an <b>s</b> ilining sa	ويتعلق وأشيارك والأشج المهيد	san keelaksia	differentiata de la legi mandaniga partici des sels sede su usual de como a distante por entirentes a vasibilità
GECGENT	IRTO ECLATORIAL CEC	59.771506541781 142.283547265221				and a place of the control of the co
STATICH	PISF		ELEVATION	HTUHIKA	RANCE	RANGE RATE
- 9	ALWAYS	VISIFLE	19.07596	5.36194	.4278226184£846E+08	1CC30710568C68E+02



This chapter is intended to provide useful operating guidelines for MAPSEP. It is assumed that the user has (1) some knowledge of the methods (Volume I, Analytical Manual), input variables (Volume II, Chapter 2) and output (Volume II, Chapters 3 and 5), and (2) a particular analysis application. Among the latter possibilities, for example are:

- o time history relationships of the spacecraft, Earth and target body;
- o generation of an integrated trajectory meeting mission requirements;
- o trajectory sensitivity to selected parameters;
- o trajectory dispersions and their propagation effects;
- o ground based and on-board navigation requirements;
- threst control authority and thrust accuracy requirements;
- o trajectory and system estimation accuracies;
- o evaluation of dynamic and measurement error sources;
- o mission strategy evaluation;
- o probabilities of mission success or science return.

  Many of these applications in terms of MAPSEP operation will be discussed in the following sections.

to be flexible in its analysis capability. However, only a small segment of input is often used at any one time. The question of where these input values come from is problem dependent. For example,

(L)

if MAPSEP is used as part of a Phase B system design process, then TOPSEP would be operated first to generate one or more integrated reference trajectories for the baseline configuration(s), GODSEP would be used parametrically to examine the effects of various levels of error sources on the system and trajectory, and SIMSEP would be operated sparingly to evaluate specific error values. The initial trajectory values, e.g., specific impulse, launch velocity and mass, power levels, etc. would be obtained from the mission analysts who performed mission opportunity searches. Earth based navigation characteristics (including their respective error sources) would be obtained from operational tracking networks. Thrust performance and other on-board characteristics, and uncertainty levels, would be obtained from the respective subsystem areas. Guidance success zones and mission strategy would depend primarily on science or other mission objectives. Unfortunately, many of the input values are not received in forms that are directly usable. A small amount of preparatory analysis and supplementary software is often needed. This requires knowledge both of the subsystem where the data origimated and of MAPSEP. A reverse problem also exists, namely, how to translate MAPSEP results into information needed by other subsystems. Thus, operating MAPSEP effectively is considerably more involved than just being familiar with the input and output.

The common element of all mode usage is the \$TRAJ namelist which describes the nominal trajectory. The required input of \$TRAJ contains as a minimum the variables



TLNCH, TEND, STATE, SCMASS, THRUST, ENGINE, STEP, ICOORD, ISTOP, NTP, NB, MODE,

with other parameters being optional. In the following sections,
it is assumed that the basic \$TRAJ has been input, except as noted.

Each mode is then treated as a separate program, which is true for
most MAPSEP applications.

# 4.1 Trajectory Generation - TOPSEP

There are four basic applications of the TOPSEP mode: (1) trajectory propagation, (2) trajectory grids, that is, a matrix of trajectories corresponding to different control parameter steps (3) trajectory targeting to meet mission objectives, and (4) trajectory targeting and optimization. These submodes are often used in sequence to eventually obtain an optimal low thrust trajectory. They can also be used independently, for example, to generate a time history of Earth-Sun-vehicle-target body relative geometries for a base-line mission. Each submode or TOPSEP option is defined by parameters in the namelist \$TØPSEP which is input directly after \$TRAJ.

The most common usage of TOPSEP is in generating a targeted trajectory with system constraints reflecting a proposed spacecraft and mission. Final mass optimization is generally not used because most low thrust trajectories have relatively flat performance curves in the local area of interest.

The targeting (and optimization) procedure begins with an initial guess of the trajectory controls: initial state and mass, thrust

segments including duration, thrust magnitude and pointing, and vehicle characteristics including specific impulse, base power level, thruster efficiency, etc. These inputs are put in \$TRAJ. The initial guess is often a combination of engineering intuition and results from a mission opportunity search program, for example, QUICKTOP (Ref. 8) for interplanetary missions and POST (Ref. 9) for near-Earth missions. The value of a reasonably accurate initial guess cannot be overemphasized. The targeting process for low thrust trajectories is often so non-linear that many iterations are spent just to bring an initial guess into the "ball park".

Assuming that a bad initial guess occurs, which is generally the case, then many single trajectories are computed for various values of initial coast time, thrust direction and magnitude in dominant thrust phases, power level, etc. One or more trajectories are selected from this semi-random collection to start the targeting submode. An alternate, or supplementary, technique is to apply the grid submode. This permits a somewhat more organized search for acceptable trajectories and also reveals the extent of nonlinearity in the control vs. target error hyperspace. In any case, the integration step size factor should be set to a large value, e.g.,

STEP = 1., to minimize run time and cost because many trajectories may have to be examined before a satisfactory one is reached.

The initial guess selection represents the zeroth level of a targeting strategy. Thereafter, the targeting submode is entered

and the strategy is to stabilize the targeting process and prevent divergence. An example of a targeting strategy for an interplanetary mission is Table 4-1 (specific numerical examples can be found in the sample case of Section 3.2.1). The first level varies initial conditions, segment times and control parameters in the early thrust (and coast) phases such that the spacecraft reaches the general vicinity of the target body with not unreasonable target conditions. The second and third levels then successively refine the control parameters and trajectory accuracy until all desired target conditions are met within tolerance. Thereafter, optimization with respect to final mass may be performed if desired.

		CONTROL	PARAMETERS	TARGET PARAMETERS	
LEVEL	STEP SIZE (STEP)	TYPE	SENSITIVITY TO TARGETS	TYPE	TOLERANCES
0	Large	Initial Conditions, Early Segments	High	A11	Very Loose
1	Medium	Initial Conditions, Early Segments	High	Helio- Centric	Loose
2	Medium	Early and Intermediate	High- Medium	Target Centered	Loose
3	Small	Intermediate and Late	Medium- Low	Target Centered	Tight

TABLE 4-1 Interplanetary Targeting Strategy

It is apparent that every mission will have a different effective targeting strategy depending upon the initial guess and mission type (interplanetary vs. near-Earth, flyby vs. rendezvous, inbound to the sun vs. outbound, etc.). Furthermore, there is a considerable amount of user decision making and intuitive reasoning that is required. The unfortunate result is that the targeting process becomes less mechanical and more subjective.

## 4.1.1 Trajectory Propagation

The simplest TOPSEP application is propagation of a single trajectory for spacecraft ephemeris information. In addition to the trajectory parameters in STRAJ with MØDE = 1 (See Section 4.0), the required STØPSEP parameters are IMØDE = 1 and MPRINT(1) equal to the appropriate print option.

### 4.1.2 Trajectory Grid

As mentioned earlier, the uses of a trajectory grid can be (1) searching for a reasonable initial trajectory to start the targeting submode, (2) investigating the non-linearity of the hyperspace containing control and target parameters, (3) determining appropriate perturbing step sizes in control parameters for numerical differencing, or (4) any combination of these.

The grid submode in TOPSEP requires only a few more parameters in \$TØPSEP than the simple trajectory propagation. These are IMØDE = 3, H(I,J) = perturbation from the nominal for the I, J control parameter, HMULT = scale factor of perturbations for second step, and MPRINT(1) equal to the appropriate print option.



For example, an input of H (2, 2) = 2., H (8, 21) = .01,

HMULT = 2., -.5, would result in the display of five trajectories:

(1) the nominal, (2) nominal with duration of second thrust phase extended by two days, (3) nominal with duration of second thrust phase extended by four days, (4) nominal with initial velocity magnitude increased by .01 Km/sec, and (5) nominal with initial velocity magnitude decreased by .005 Km/sec.

If more than two steps in each control direction are desired, it is a simple matter to stack cases. The organization of the input deck is as follows. After the first case (\$TRAJ and \$TØPSEP namelists) each succeeding case requires only a \$TØPSEP namelist with the appropriate changes to H and HMULT. To cycle back to the TOPSEP data overlay the parameter MODE must be set to -1 in the \$TRAJ namelist. The main overlay will not be re-entered; thus, the run will be terminated after the last \$T\(\phi\)PSEP namelist. Any additional \$TRAJ namelists will be skipped in the search for \$TOPSEP namelists. If the user wishes to adjust the nominal trafectory for any of the subsequent stacked cases (i.e., add thrust phases, extend or reduce phase durations, change cone and clock angles, etc.) MØDE must be set to 1 in the first \$TRAJ. Each of the following stacked cases consists of pairs of \$TRAJ and \$TØPSEP namelists. The user should realize, of course, that any inputs, which are not explicitly reset, maintain their last value in succeeding cases.

# 4.1.3 Trajectory Targeting

The primary purpose of the TOPSEP mode is to generate an

integrated trajectory which fulfills a given set of mission constraints while minimizing fuel expenditure (or maximizing deliverable payload). By far the most difficult part of trajectory generation is the targeting process. Non-linearities in trajectory dynamics often wreak havoc with the linear methods used in both targeting and optimization. This is especially true for interplanetary low thrust trajectories with an inaccurate initial guess. It is highly recommended that the user familiarize himself with Chapter 5 of the MAPSEP Analytic Manual, and continually refine his targeting strategy depending upon the results of each iteration.

Input for a TOPSEP targeting run consists of the namelists \$TRAJ and \$TOPSEP. The \$TRAJ variables define the reference trajectory and serve as the initial guess (zeroth iterate) for the run. The \$TOPSEP namelist defines the targeting strategy. Those parameters which are used to alter the initial trajectory in the TOPSEP mode are described below.

- o IMØDE = 2 specifies the targeting (and optimization) submode.
- IASTM = 1 refers to the augmented state transition method of targeting. The sensitivity matrix, which is necessary to compute the control correction, is calculated from the integrated STMs. Selection of this option precludes the optimization process and also requires that the trajectory be terminated on final time (ISTØP = 1 in \$TRAJ). The set of controls is restricted when STM targeting is used. The controls which may be selected are: 1) the initial state (x, y, z, x, y, z); 2) thrust phase end time; 3) throttling; 4) cone angle; and 5) clock angle. If IASTM = 0 numerical differencing techniques are applied

to compute the sensitivity matrix. This targeting procedure requires more computation time; however, there is no restriction on the set of controls which may be selected.

- Non-zero values in the H array denote active control parameters. In addition, when IASTM = 0 the values of H represent the control perturbations to be used in constructing the sensitivity matrix. For example, if H(4, 21) = 10., H(2, 1) = .1, H(4, 5) = .5 are input, then there will be three active control parameters: initial position magnitude, phase end time of the first thrust phase and thrust cone angle of the fifth phase. The perturbations used to construct sensitivity matrices will be 10 Km., .1 days and .5 degrees, respectively.
- o ULIMIT are the minimum and maximum bounds, if any, on the control parameters. ULIMIT can be used not only to impose hardware related constraints, but also to modulate the targeting process. Used in conjunction with PCT, ULIMIT insures that control corrections will not be unacceptably large. Also, proper usage of ULIMIT will restrict controls such as phase end times from drifting through any other set phases.
- o IWATE determines the type of weighting scheme to be applied to the control parameters. The most frequently used values of IWATE in order are:
  - oo IWATE = 2 for normalized control weighting when very little or no information about the targeting problem is present and when controls with

different units are used simultaneously.

This is also valid when all the controls are thrust phase times, and normalization is still according to the magnitude of the controls.

- oo IWATE = 1 when the user has gained experience with the specific targeting problem and can select his own weights.
- o UWATE are control weightings which scale the basic weighting scheme specified by IWATE. The relative weights among the control parameters impact the targeting process.

In general, weights should be smaller for controls earlier in this mission than for similar control parameters in later mission phases to account for diminishing target sensitivities to controls in these latter phases.

- o Non-zero values in the TARTØL array denote active target

  parameters and their tolerances, analgous to the H array for
  control parameters.
- o TARGET contains the desired values of the active target parameters.
- by their respective tolerances; this is especially helpful in determining linear control dependency (See STØL) when different types of target variables are used, e.g., position and velocity or time of flight and closest approach distance.
- o STØL is used in linear dependency tests, that is, if two (or more) control parameters have the same effect on the target parameters, as measured by a vector inner product test of the appropriate columns of the sensitivity matrix, then at least one of the dependent control parameters is deactivated for the current iteration. STØL is the sine of the minimum acceptable "angle" between the column vectors of the sensitivity matrix and is highly sensitive to the control weights and target tolerances. If no target weighting is employed (JWATE = 0), then STØL should be quite small, for example STØL = 1.E-6; otherwise, STØL should be about .001. STØL can also be used to terminate a targeting run after the

- sensitivity matrix has been computed and before any trial trajectories are taken (ST $\emptyset$ L=1).
- o PCT determines what fraction of the target error should be eliminated for the current iteration and scales the control correction accordingly; if the targeting porcess is very non-linear, then the sensitivity matrix (used to compute control corrections) is valid only over small regions around the nominal, and PCT should be set to a small level, e.g., PCT = .1; on the other hand, a full control step (PCT = 1.) will attempt to remove all the target error at once which is effective only for relatively well-behaved (linear) problems.
- o NMAX is the maximum number of iterations which is typically set to less than 3 so that the targeting process can be continually monitored and the targeting strategy can be changed accordingly.

The parameters H, ULIMIT, IWATE, UWATE, TARTOL, TARGET, JWATE, STOL, PCT and NMAX generally provide the most significant effects and are the most often used parameters in the adaptive targeting process. However, there are also a number of options which are very helpful in stabilizing or accelerating convergence of the targeting process under certain conditions.

o BTØL is used in conjunction with the control constraints

(ULIMIT) to define a marginal area near control boundaries.

If a control lies in this area and a control correction is

made to the ULIMIT boundary, a modification is made to the iteration process. The control on the bound is made inactive and a control step using the remaining controls is computed from the modified performance gradient and sensitivity matrix without incrementing the iteration counter. If the control is in the feasible region but not in the tolerance region and a control correction is made to the boundary, the control is also made inactive; however, a new performance gradient and sensitivity matrix are computed for the next step.

- trajectories are worse than the reference in terms of the quadratic target error index. If EPSØN is zero, the run is terminated; if EPSØN is non-zero, it is assumed that the sensitivity matrix is invalid and a new sensitivity matrix is computed using the reference trajectory and new control perturbations (the old values (H) scaled by EPSØN). The trial trajectory process is then repeated. EPSØN is used to compute a more well-behaved sensitivity matrix by changing secant partials to tangent partials, or vice versa, depending upon the strategy.
  - used to find the minimum target error (or cost index) in the ∆ U direction. They are useful tools to restrict the search in the ∆ U direction depending upon the level of the targeting search (refer to Table 4-1).

- oo GTRIAL(1) is most useful in restricting the percentage decrease in the size of the control scale factor from the preceding estimate.
- oo GTRIAL(2) restricts the scale factor estimate to
  a maximum allowable value.
- scale factor. A "loose" tolerance value of .1 will cause the search to terminate if the estimated control scale factor is within 10% of the preceding value. A "tight" tolerance of .01 or less may result in the use of all of the possible polynominal curve fits in the ΔU direction since convergence is based upon a 1% difference in two successive scale factor estimates.
- oo GTRIAL(4) has a similar control on the search as

  GTRIAL(3). The factors which are compared are the

  estimate and actual values of the index to be

  minimized. If GTRIAL(4) is relatively small (<.01)

  it is likely that more trial steps will be taken per

  iteration than if the tolerance is "loose" (>.1).
- OO GTRIAL(5) restricts the extent of the search in the

  A U direction. The maximum value is 4 which indicates
  that all four curve fitting techniques may be used if
  convergence is not realized up to the fourth fit
  (e.g., two-point-one-slope fit, three-point-oneslope fit, three-point fit, four-point fit).

- o An option that can save significant computer time is the ability to input the target sensitivity matrix S and performance gradient G, by setting INSG = 1 in \$TOPSEP, instead of computing S and G internally. This might be done, for example, if (1) a previous run computed a sensitivity matrix, but neither the trial trajectories nor a control correction were implemented, or, (2) the number of controls and/or targets were to be changed (the input G and S would be composed of elements from previous G and S matrices) assuming the reference trajectory has not been changed (much), or (3) a sensitivity matrix is available from some other program or method.
- o DFMAX is used to restrict increases in the cost index (negative of payload) associated with a targeting step. For example, if a targeting control correction reduces the target error but also reduces the SEP payload more than the DFMAX specification the control correction will be appropriately scaled.

The targeting process can best be illustrated by a simple example. Figure 4-1 is a diagram of control parameter space ( $\rm U_1$ ,  $\rm U_2$ ) with contours of constant target error ( $\rm T_5$   $\rm T_4$  ...  $\rm T_o$ ). Target contours are a strong function of the particular types of target and control parameters, and are often very non-linear. The outer dashed lines represent control constraints (ULIMIT) and the region between the inner and outer dashed lines represent the "marginal" area. The starting point or initial guess lies at  $\rm U_2$  = 0 and the boundary  $\rm U_1$  = ULIMIT(1, 2). The eventual point of convergence is near one of two possible minima and on the boundary  $\rm U_2$  = ULIMIT(2, 2). Convergence to a local minimum and not to a point of zero target error is generally the case rather than the exception even though there are more

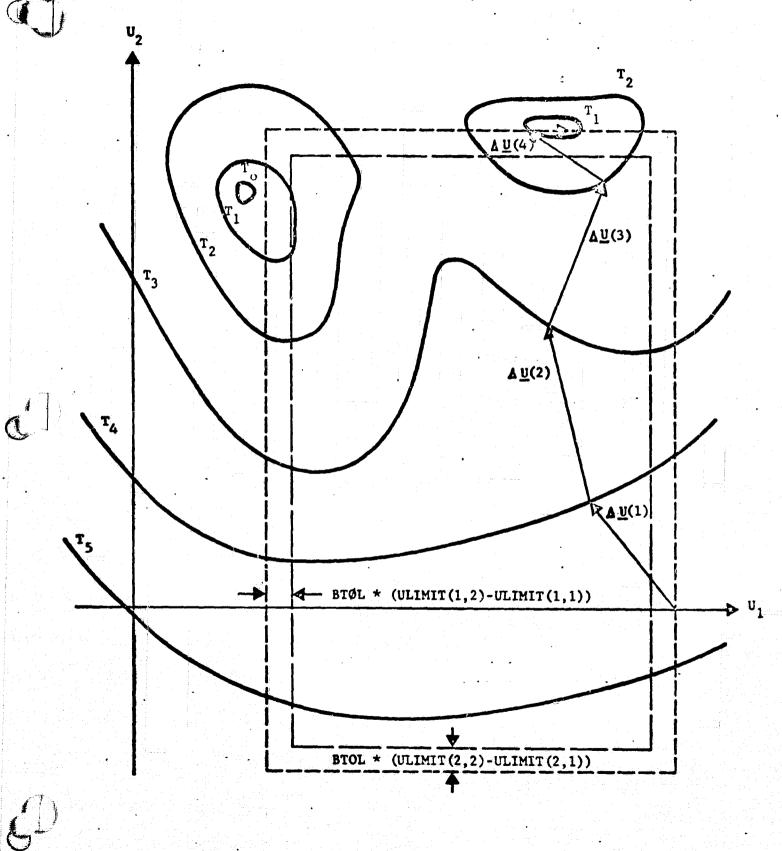


Figure 4-1. Example of Targeting Process

controls than target parameters. The control correction steps  $\underline{\Lambda} \ \underline{U}(1), \ldots, \underline{\Lambda} \ \underline{U}(5)$  represent the results of five corresponding iterations of TOPSEP, each one of which includes computation of the sensitivity matrix and trial trajectories. Note that  $\underline{\Lambda} \ \underline{U}(3)$  resulted in controls which lie in the feasible region but outside the marginal area, and the next iteration  $\underline{\Lambda} \ \underline{U}(4)$  resulted in contact with the  $\underline{U}_2$  boundary. The next iteration  $\underline{\Lambda} \ \underline{U}(5)$  moved along the  $\underline{U}_2$  boundary to the point of minimum target error. If  $\underline{\Lambda} \ \underline{U}(3)$  had ended up within the marginal area, but not necessarily on the  $\underline{U}_2$  boundary itself, then the BTØL logic discussed above would be exercised.

Although the control corrections appear to be orthogonal to the target error contours, this is not always the case (except in a small region near the reference control point of each iteration). The control parameter weights (UWATE) and basic weighting scheme (IWATE) are used to alter the shape of the general contours such that the control correction is applicable over a wider control area, rather than the Iocalized area near the reference point. Indeed, a more accurate representation of the contours and targeting process would be in "weighte!" space, that is, control and target parameters divided by their respective weights. In weighted space, wherein the control corrections are actually computed, contours might look completely different. Furthermore, the test of linear dependency (STØL) between control parameters takes on a more obvious geometrical significance because the weighted control and target parameters are not so dependent upon units (seconds vs. days, radians vs. degrees, etc.) or mission segment (early vs. late).



The targeting strategy can be reduced to choosing appropriate control and target parameters and their weights. Because of this, targeting is more an art than a science. Furthermore, a good initial guess is required to minimize computer time and "artistic" effort.

# 4.1.4 Trajectory Optimization

When a trajectory has been found which meets, or nearly meets, desired targeting conditions, TOPSEP can be used to refine the trajectory and maximize payload. However, this option is rarely used because by the time a targeted trajectory has been computed which also meets the varied constraints of the mission and S/C system, there is little performance left to optimize. It is probable of course that only a local optimum has been reached, but to find another local optimum (much less the global optimum) requires intergeting the trajectory, at least temporarily, to reach a significantly different point in control vs. performance space.

The optimization problem is similar to that illustrated previously in Figure 4-1 where target error contours are replaced by performance contours. A significant difference, however, is that the starting point is already very close to the (local) optimum.

The inputs to \$TOPSEP for optimization include all of those required for targeting, in addition to

o ØSCALE, used to establish the relative weighting between net cost (See Analytic Manual) and target error for simultaneous optimization and targeting; that is, the parameter to be minimized is the sum of net cost,

multiplied by **GSCALE**, plus the quadratic target error; note that the quadratic target error depends upon both the actual target error and their tolerances, and it is close to or less than one for a reasonably targeted trajectory.

- o TUP is the boundary of quadratic target error above which targeting only is performed and below which simultaneous targeting and optimization occurs.
- o TLOW is the boundary of quadratic target error above which simultaneous targeting and optimization occurs and below which optimization only is performed.
- o DP2 is a constant which is used to scale the optimization correction relative to the constraint correction. Thus, the user is capable of restricting optimization control corrections which introduce large target errors. (Analytic discussion in Reference 1, page 50.)

Previous experience has shown that optimization of low thrust interplanetary trajectories is generally futile, once targeted conditions have been reached.



### 4.2 Linear Error Analysis - GODSEP

The linear error analysis mode provides a relatively quick evaluation of trajectory errors due to anticipated system and environmental uncertainties. There are several analysis techniques available within GODSEP depending upon the mission segment, affected systems and desired analysis depth. The most common options are (1) generation of trajectory and state transition matrix data related to a selected reference trajectory and storing the data on disc and/or tape, the STM file, (2) a covariance analysis about some portion or all of the reference trajectory using data on the STM file, (3) a combined STM file generation and covariance analysis in a single run, (4) an evaluation of error source mismodeling effects (generalized covariance) based upon a previous covariance analysis (which assumed perfect modeling), and (5) a covariance analysis of the reference trajectory using integrated covariances (PDOT) instead of the transition matrix methods.

Whatever option is chosen, the namelist \$G\psiDSEP must be input directly after \$TRAJ to specify necessary parameter values. Other input features are optional, for example, specification of STM and/or GAIN files, input of namelist \$GEVENT for guidance events, and input of fixed field cards containing measurement event and propagation event data.

A typical error analysis needs as input (1) an integrated reference trajectory, (2) expected dynamic and navigation error sources, (3) a guidance and navigation strategy, and (4) system constraints,



tolerances and evaluation criteria. The reference trajectory is obtained from TOPSEP as discussed in the previous section. Both expected error source levels and the guidance and navigation strategy are related to mission objectives and subsystem characteristics. Strategy includes the type and density of observations used in navigation, both on-board and ground based, orbit determination (OD) method, and the type and frequency of guidance updates.

System constraints and tolerances can be defined a-priori or can be determined as part of the error analysis. Generally, some baseline requirements are established and the error analysis either confirms them or points out needed changes. Another criterion for evaluation of trajectory errors is the guidance success zone. This is the region of acceptable terminal error as determined by minimum science return and/or by post encounter requirements.

In terms of MAPSEP and GODSEP operation, once a trajectory has been defined by TOPSEP, that is, initial state vector, thrust/coast segment times, thrust controls, etc., then the linear error analysis begins with generation of an STM file. The STM file is created by propagating the reference trajectory and writing, on disc, state transition matrix and trajectory related data at specified epochs. The STM file can be saved on tape for permanent storage such that subsequent analyses do not need to regenerate the reference data. This is often the case for a parametric examination of error sources and mission strategies.

Once an STM file is created, GODSEP can be operated in the

standard covariance mode. That is, a-priori covariances (control and knowledge) are propagated using transition matrices, off the STM file, from one event to the next. At each event the control and/or knowledge covariance is modified. For example, at a measurement event, observation matrices and a filter gain are computed, then the knowledge covariance is updated to reflect the new trajectory estimate (non-deterministically). The only exceptions where a covariance is not modified at an event are eigenvector (for instantaneous covariance display) and prediction (for display of a future covariance assuming no further measurements or guidance). Thus, a time history of expected uncertainties in actual (control) and estimated (knowledge) parameters is computed as the sequence of mission events unfolds.

In the course of a system design, the standard covariance smalysis is run many times with varying levels of error sources, measurement schedules, guidance policies, etc. At some time, however, certain key assumptions should be evaluated. One of these assumptions is the effective process noise model which is an integral part of covariance propagation using transition matrices. The PDOT aption in GODSEP permits a more realistic (in a mathematical sense) evaluation of thrust process noise by integrating a state covariance explicitly. The state is augmented by parameters which characterize the noise process. Correlations between thrust noise and other parameters, dynamic and measurement, are computed as part of the PDOT covariance propagation. This is in direct contrast to the standard

covariance analysis where these correlations are assumed to be zero.

In many cases, these correlations will be small, but in some mission

phases they may contribute significantly to the error analysis results.

The PDOT option does not use the STM file, but is more costly to run than STM file generation and a standard covariance analysis combined, primarily because of the augmented state. Furthermore, because of its support role, no guidance or prediction events are allowed in PDOT.

A second assumption in the standard covariance analysis is that all process characteristics and expected performance deviations are known. That is, the OD algorithm assumes that uncertainties in dynamic and measurement parameters are perfectly described by input levels. If the true uncertainty in any parameter is different from that assumed by the OD process, the error analysis results may be invalid. Verifying error analysis results can be done by simulation (See SIMSEP description) but this can be expensive. So, an alternative verification technique is provided in the error analysis mode, called generalized covariance.

The importance of parameter mismodeling is not just knowing that it exists -- it will always be impossible to model the real world exactly -- but also knowing what its impact is on the error analysis. To determine this, generalized covariance first requires running of a standard covariance analysis with the filter gains at each measurement being written on the GAIN file. The GAIN file should be created in the course of any standard covariance analysis

if it is anticipated that a generalized covariance will be run later to evaluate suspected mismodeling.

In execution, generalized covariance operates on a set of "true" covariances, propagating them by using the STM file and updating them at a measurement with the assumed filter gain from the GAIN file.

The "true" covariances may have different a-priori levels on some parameters and may even include parameters not appearing in the original error analysis. The resulting output may then be compared to the original results to determine the sensitivity of the OD process to the mismodeling.

Note that generalized convariance handles, in effect, two types of mismodeling: differences in the level of process uncertainty and mismodeling of the process itself. Obviously, a more rigorous analysis would apply the trajectory simulation mode, SIMSEP. However, running SIMSEP would be very costly to produce the studies that generalized covariance can perform in one short run. This assumes of course that linearity is valid which is the key assumption in GODSEP. By using generalized covariance in GODSEP, SIMSEP can be used primarily for testing linearity assumptions and not mismodeling.

### 4.2.1 STM File Generation

A basic requirement for the standard covariance analysis is a reference trajectory with associated transition matrix information.

The trajectory data is first created by GODSEP and stored on a disc file (STM). The STM file can then be used and reused for any number of linear error analyses related to the reference mission.

In addition to the standard trajectory variables (Section 4.0), the \$TRAJ namelist requires

- o ISTMF = 1
- o MØDE = 2
- IAUGDC to designate which dynamic parameters are augmented to the basic spacecraft state of position and velocity
- NEP to designate the ephemeris body if IAUGDC has activated any ephemeris body elements.

Since the STM file is intended for many applications, it is recommended that IAUGDC activate all parameters that the analyst thinks might be needed in subsequent error analyses.

The next namelist, \$GØDSEP, is required to establish the grid of trajectory points at which spacecraft state and mass, thrust acceleration and other trajectory data are computed, and between which transition matrices for the augmented state are computed.

The grid of time points need not correspond either one to one or to an exact time of events of a following error analysis but should be set up to cover approximately the expected events. For example, a greater intensity of time points should be inserted where Earthbased tracking arcs are anticipated whereas only a few points should be placed between tracking arcs. It is very important that the time grid on the STM file cover the maximum conceivable event schedule to avoid regeneration of an STM file.

Time points can be established in many ways. The simplest

method is to set NSCHED equal to the number of scheduling cards and then follow the \$GØDSEP namelist (which would contain only NSCHED) with scheduling cards corresponding to a desired trajectory grid. Either arbitrary measurements or propagation events can be used.

An alternate scheme is to use an anticipated error analysis event schedule. That is, specify appropriate eigenvector events (NEIGEN and TEIGEN), prediction events (NPRED, TPRED and TPRED2), guidance events (NGUID, TGUID, TCUTØF and TDELAY) and NSCHED. Then follow with scheduling cards corresponding to a desired measurement schedule. Of course, the composite event schedule should be set up to cover all possible future analyses.

Whatever the method of establishing time points for the STM file, a number of additional time points will be inserted automatically. These correspond to thrust policy changes, that is, thrust reorientation and thrust/coast switching, and to changes in the number of operating thrusters.

## 4.2.2 Standard Covariance Analysis

Once an STM file is generated, the standard covariance analysis can be run either as a stacked case or as a separate run. The only variables required in \$TRAJ are ISTMF = 2 and MØDE = 2. Inputs to \$GØDSEP are much more involved and depend upon the particular analysis in mind.

The easiest GODSEP application is propagating a covariance from one time point to another. This may be desired, for example, to look at effects of thrust or other dynamic uncertainties on the

growth of trajectory errors. In this case \$GØDSEP requires:

- o TCURR = input epoch of the a-priori covariance;
- o TFINAL = GODSEP termination time; this is required only if it is different from the final time on the STM file;
- o P is the a-priori covariance (in standard deviations) and associated dynamic and/or measurement covariances: CXS, CXU, CXV, PS, CSU, CSV, PU, CUV, PV. Note that the augmented parameters for a simple covariance propagation may be input as either solve-for or consider parameters;
- o IAUG denotes the augmented parameters which correspond to the input covariances and IEPHEM to the form of ephemeris uncertainty input (if any);
- o NEIGEN the number of time points at which the covariance is printed and TEIGEN is the array of time points; the exact times will correspond to whatever is available on the STM file, near the desired times, within the forward and backward time tolerances, TØLFØR and TØLBAK, respectively; the user shall keep in mind that thrust control events (switching of thrust policy or number of operating thrusters) are automatically printed at the exact times of occurrence;

- o EPTAU and EPSIG are required if thrust noise
  is present, otherwise DYNØIS = .FALSE. must
  be set;
- o  $J\emptyset BLAB$  is used for a job heading to describe this run.

No other input needs to be included in GDSEP, nor are scheduling or any other cards required.

The most common GODSEP usage is the evaluation of a navigation strategy and a set of error sources for the reference mission. This includes tracking, orbit determination (OD), guidance and, possibly, prediction, propagation and eigenvector events for additional data display. In this case, \$GØDSEP requires all of the inputs needed for the simple covariance propagation plus

- o CØNRD = .TRUE., and PG, CXSG, ..., PVG, for
  the a-priori control covariance if it is
  different from the input knowledge covariance,
  and TG, XG, GMASS to define the trajectory
  epoch;
- o Guidance event parameters: NGUID, TGUID, TCUTØF,

  TDELAY, CØNWT, IGPØL, IGREAD to denote

characteristics of the thrust update process; if IGPØL is zero for any guidance event (that is, an artifical guidance event whose sole function is to print the control covariance, analgous to an eigenvector event), then the corresponding event values in TCUTØF, TDELAY, CØNWT, and IGREAL are ignored;

- o Other non-measurement events: NEIGEN and TEIGEN for eigenvector; NPRED, TPRED and TPRED2 for prediction;
- o IGAIN for the type of OD filter;
- o SIGMES, SIGRS, SIGLØN, SIGZ, CØRLØN for tracking measurement noise standard deviations;
- o PUNCHE to denote at which event types punched card output is obtained (covariance and state);

#### o NSCHED

There are of course many optional parameters which may be input depending upon the particular GODSEP application. For example, if the number of 2-way doppler measurements per day is different than 12, then DØPCNT should be changed, or, if the error analysis event schedule must be meshed with a fairly different STM grid, then the tolerances TØIFØR and TØLBAK might be altered.

With regard to schedule tolerances, the user should keep in mind the process of which events are chosen to be executed at which

STM time points. For example, in Figure 4-2, Event  $E_1$  will be performed at the STM time point STM(I). Event  $E_2$  will not be processed

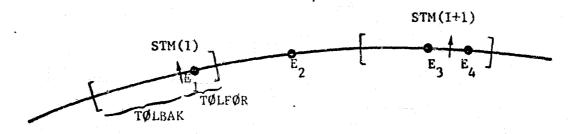


Figure 4-2. Event and STM Meshing

at all; if SCHFTL = .TRUE., then the run will be terminated immediately. Events  $E_3$  and  $E_4$  will both occur at STM(I+1). In Figure 4-3, where TØLBAK is so large that it overlaps a previous STM point,  $E_1$  is still executed at STM(I) because an earlier STM point and its tolerances take precedence over subsequent STM points. Events  $E_2$ ,  $E_3$  and  $E_4$  are all executed at STM(I+1). Thus, it is very important that some foresight be applied to creation of the STM file and some consideration be applied to the use of the STM file in event scheduling of a covariance analysis.

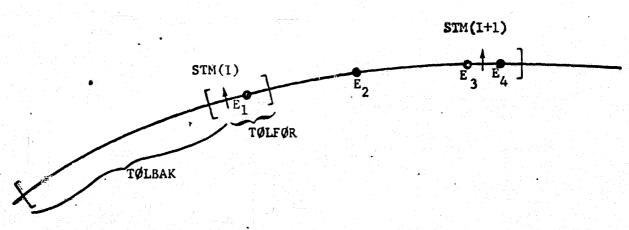


Figure 4-3. Event and STM Meshing

D

A number of print and input/output options also exist in \$GØDSEP.

One of the more important output controls is GAINCR which determines whether or not a GAIN file is to be created for a subsequent generalized covariance analysis (Section 4.2.4). Another option is the punch flag, PUNCHE, which produces punched cards of state and covariance for selected event types. This option is quite useful in subsequent error analyses to eliminate unnecessary repetition of mission segments, especially tracking arcs.

Following the \$GØDSEP namelist are fixed field schedule cards which determine the type, density and span of measurements used for navigation and the spacing of propagation events. Propagation events are used primarily to condition the process noise terms, in particular, to break up long propagation intervals, for example those greater than 50 days, wherein there are no other events and in which the effective process noise model breaks down.

An option which can be used to facilitate parametric operation of GODSEP is storing the \$GØDSEP namelist on the GAIN file (GAINCR = .TRUE.) even if no subsequent generalized covariance analysis is intended. In any following error analysis run, setting ISTMF = 3 in \$TRAJ will cause the \$GØDSEP namelist to be read off the GAIN file and the user need only input those parameters in \$GØDSEP which are different from the run that created the GAIN file. The user will still, however, be required to input NSCHED and follow the \$GØDSEP namelist with the appropriate measurement and propagation event scheduling cards.



-- 2

After the scheduling cards there exists the possibility of one more set of cards, the namelist \$GEVENT. If guidance events are requested and if any of the entries in IGREAD (in \$GØDSEP) are non-zero, then the \$GEVENT namelist must be input immediately after the scheduling cards. If IGREAD = 2, \$GEVENT allows input of VMAT, the variation matrix of target parameters with respect to guidance start state, SMAT, the sensitivity matrix of target with respect to guidance thrust controls and BURNP, guidance burn parameters. If IGREAD = 1 or 2, \$GEVENT also allows updating of values in CØNWT, NCØN, TARWT and UMAX. One \$GEVENT namelist is required for each non-zero entry in IGREAD up to the number of guidance events (NGUID). Using \$GEVENT increases the speed of a GODSEP run by eliminating guidance related computations already performed by earlier runs. A standard output at all guidance events are punched cards for VMAT, SMAT and BURNP whenever these matrices are computed and not already input.

It is apparent that GODSEP input (Figure 4-4) is complicated because of the requirement for extensive analysis capability.

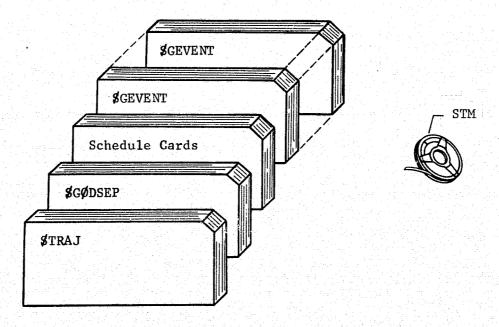


Figure 4-4. Standard Covariance Analysis Input

There is no substitute for experience in terms of what input/output options are chosen and what sequence of GODSEP runs should be made for a specific mission or problem.

# 4.2.3 Combined STM File Generation and Error Analysis

In general, it is not recommended that GODSEP cases be stacked in a single run because of the amount of output which the user should look at before submitting the next case. There is one recognized exception -- combining the STM file generation with a standard covariance analysis. However, even this stacked case is not without peril because of the danger of miscreating the STM file with subsequent operation by an unsuspecting covariance analysis. The combined STM generation and analysis run may be used for two reasons: (1) the covariance analysis is a simple check case to verify the adequacy of the STM file, or (2) the reference mission is relatively unique and no further analysis is anticipated.

The inputs to MAPSEP are straightforward (Figure 4-5) and

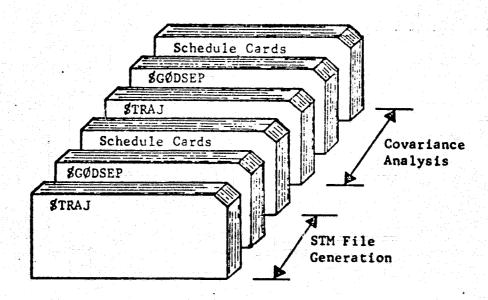


Figure 4-5. Combined STM Generation and Error Analysis Input

follow the detailed descriptions contained in Sections 4.2.1 and 4.2.2 for generation of the STM file and covariance analysis, respectively. Since GODSEP does not retain event information from one run to the next, the event and scheduling cards used to generate the STM file must be repeated for the error analysis (assuming the STM file is to be applied only for that error analysis).

### 4.2.4 Generalized Covariance

A standard covariance analysis (SCOV) assumes the OD filter knows percisely the form, behavior and initial level of any process uncertainties, and can estimate and/or consider their appropriate effects. Generalized covariance (GCOV) is used to examine differences between the assumed and real-world uncertainties as they interact with the OD process. Thus, an explicit requirement for exercising the GCOV option is a previous SCOV run which has written its filter gains on a GAIN file (GAINCR = .TRUE. in \$GØDSEP). The GCOV run(s) can be stacked behind the SCOV, although this is generally not recommended.

Exercising GCOV requires two tapes or files, STM and GAIN. The STRAJ namelist requires only MØDE = 2 and ISTMF = 3. The SGØDSEP namelist also requires only a few inputs because the measurement, propagation, and print schedule, a-priori covariance, noise levels, etc. are all obtained from the GAIN file. Thus, SGØDSEP input is

- o GENCØV = .TRUE. and GAINCR = .FALSE.;
- o IAUG to activate ignore parameters, that is, those parameters known to the real-world



(GCOV) but not by the assumed world (SCOV); note that only those parameters not already activated as solve-for or consider in the SCOV are available to be used as ignore parameters;

- o CXW, CSW, CUW, CVW, PW (covariance terms) for the ignore parameters;
- o Any parameters to be mismodeled, for example, covariance P, CXS, ..., PV, measurement noise SIGMES, thrust noise EPTAU and EPSIG, etc.;
- o Changes in events, although this is not recommended because it may alter the covariances even without mismodeling.

If the user is confident of his input, then several cases of GCOV can be stacked (by repeating the \$TRAJ and \$GØDSEP input described above). Such a run might include, for example, comparison of different thrust noise levels and correlation times from those assumed by the OD filter. The sensitivity to mismodeling of thrust errors can be a very important criteria in the choice of an OD filter for low thrust missions.

# 4.2.5 PDOT

One of the key assumptions in a standard covariance analysis is the effective thrust noise model. A means of evaluating this model, as well as other dynamic modeling assumptions is the explicit integration of the covariance matrix differential equations (PDOT).

This is in contrast to the transition matrix methods used in the standard covariance analysis.

Since no transition matrices are required, the STM file is not needed except in the possible case where a default \$TRAJ namelist is desired which contains reference trajectory parameters. In this case, MØDE = 2 and ISTMF = 2 are the only inputs required in \$TRAJ.

Otherwise, the normal \$TRAJ inputs are required: TLNCH, ..., NB, along with MØDE = 2 and ISTMF = 0.

The GODSEP namelist and scheduling cards are identical to that used in the standard covariance run (Section 4.2.2) except for PDOT = .TRUE. Most of the options are also available, for example, generalized covariance.

There are a number of restrictions on PDOT capability because of its function as a support option intended to check on covariance propagation modeling. In particular, no prediction or guidance events can be performed. Furthermore, if the input covariance epoch, TCURR, is not equal to the trajectory epoch, TSTART (in \$TRAJ), then STATE and SCMASS in \$TRAJ must be altered and correspond to TCURR.

## 4.3 Trajectory Simulation - SIMSEP

The two main purposes of trajectory simulation are to examine

(1) deterministic trajectories, especially the effects of dynamic nonlinearities, and (2) the impact of process mismodeling on trajectory errors. Each trajectory is simulated in an operational environment with a parallel set of "real world" and "assumed world" conditions. The real world conditions are randomly selected from a set of uncertainties associated with the dynamic, environmental, and systems models. The assumed world conditions represent a best estimate of what the real world is like. It is obtained by direct (but corrupted) and indirect observations of the real world processes. The trajectory or mission is carried through a set of trajectory related events, e.g., orbit determination and guidance, until a stopping condition is reached, usually target encounter.

Once a mission has been completed, the trajectory is characterized by fuel expenditure, terminal error, magnitude of thrust control
updates, etc. In line with the main objectives, a comparison can
then be made between real and estimated world terminal conditions.

Furthermore, it will also be possible to make a comparison between
real (and estimated) terminal conditions computed in SIMSEP and
results computed in an equivalent linear error analysis run. Based
upon these comparisons many actions may be taken, the most obvious
being an update of assumed world processes and models to reflect the
real world more accurately.

SIMSEP has been designed to run a sequence of trajectory simulations in order to generate statistics on the terminal conditions.



Clearly, the confidence attached to these statistics is largely dependent on the number of samples taken. As a consequence, this Monte Carlo approach is, generally, very expensive in terms of computer processing time. This often restricts SIMSEP operation to a support role or to analysis of specific processes, e.g., terminal guidance algorithms or thrust noise effects.

Because SIMSEP can have a complicated input, and is expensive to run, it is recommended that a zero-error case be made first to prevent undue expense as a result of input mistakes. This involves running a single cycle of the reference mission, including all guidance events and related inputs, but with zero-values input for dynamic errors or knowledge uncertainties. The results from one mission cycle with no errors should compare favorably with the targeted reference trajectory obtained from TOPSEP, except for small differences due to numerical integration noise. After a successful zero-error case,

### 4.3.1 Single Cycle - No Error

The zero-error case is a means of verifying the basic mission input and is one of the easiest SIMSEP runs to make (Figure 4-6).

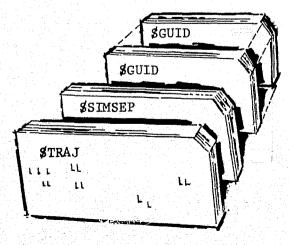


Figure 4-6. SIMSEP Mode Input

After the standard \$TRAJ namelist containing TLNCH, ...., NB, and MØDE = 3, the input to \$SIMSEP is NGUID for the number of maneuvers or guidance events and INREF = 0, forcing SIMSEP to compute reference trajectory conditions at each event and at the final time. For each guidance event, there must be a corresponding \$GUID namelist containing

- o KTER to determine whether or not target conditions are to be computed after this guidance event in order to evaluate its success;
- .o TGUID for the maneuver epoch;
- o ITARGT and IGUID for the guidance philosophy;
- o H array to define the active low thrust control parameters for this guidance event; note that controls can be either an impulsive delta-velocity or low thrust parameters and if they are impulsive no entries are necessary in H;
- o NTP for the target body code;
- o TTARG for the target time;

- o UWATE for control parameter weights;
- o TARTOL for allowable tolerances on the target errors; and
- o NMAX for the maximum allowable number of iterations if nonlinear guidance is specified.

The zero-error case should result in extremely small guidance corrections and target errors. Besides confirming the mission and guidance input, a zero error case will generate punched card output (independent of IPUNCH) which will greatly facilitate subsequent SIMSEP runs. Assuming INREF = 0, the punched cards will include at each guidance event, the reference state, mass, target variables and either a sensitivity matrix of target parameters w.r.t. control parameters (for the nonlinear guidance case) or a guidance matrix of control corrections w.r.t. state errors at the guidance time (for linear guidance). The reference state and mass at the trajectory end (TEND) time will also be punched.

### 4.3.2 Single Cycle - Forced Monte Carlo

A very useful method of evaluating either specific errors or worst case missions is a "forced" Monte Carlo run. With the random number seed, IRAN, set to zero, all error sources are set at their one sigma levels. Thus, discrete known levels of errors can be studied, instead of randomly sampled. Of course, if all the error levels are one-sigma, the mission itself may represent a very improbable case, possibly as high as 100 **T**.

Input for a forced Monte Carlo run is the same as for the

previous zero-error case with the obvious exception of non-zero errors. The \$TRAJ namelist is the same, and the \$SIMSEP namelist contains

- o IRAN = 0;
- o Ephemeris and gravitational errors: EPHERR, GMERR;

  NEP2 to identify the ephemeris body(s); TEPH for the

  epoch(s) at which ephemeris uncertainties are

  evaluated;
- o Spacecraft and thrust related errors: SCERR, TCERR, TVERR;
- o ΔV execution errors: EXVERR, if there are impulsive maneuvers; the chemical propulsion specific impulse SPFIMP;
- o The control covariance, PG, representing the initial position and velocity uncertainties; a forced Monte Carlo state error consists of a vector containing the square root of each eigenvalue rotated back into state space;
- o AØK, the upper bound of acceptable quadratic target error for non-linear guidance events (total convergence occurs when the quadratic target error is less than unity);
- o INREF = 0, or if reference conditions are available, then INREF = 1, and the reference state and mass at the final time (XEND and MEND, respectively) must be input;

- o NGUID for the number of maneuvers.

  Each #GUID namelist must contain
  - o KTER, TGUID, ..., NMAX, the guidance characteristics as in the zero error case;
  - o If INREF = 1 in \$SIMSEP, then the reference state

    (XGREF and mass MCREF) at the maneuver epoch, target conditions

    (TARGET, XTREF, MTREF) and either the sensitivity matrix

    for nonlinear guidance or the guidance matrix for

    linear guidance (S) must all be input;
  - o KDIMEN to denote the augmented parameters to the spacecraft state which have been estimated for this maneuver; NEP identifies the ephemeris body if the augmented state includes ephemeris or gravitational parameters;
  - o P, PS, CXS are estimation uncertainties corresponding to the spacecraft state, augmented parameters and correlations, respectively.

The forced Monte Carlo option is often used in parametric fashion to study specified levels of a particular error source, for example, thrust noise. Stacked cases can be used to perform the parametric study by repeating the namelist sequence *TRAJ, \$SIMSEP and the appropriate number of \$GUID's. An alternate, and more efficient, method is to set MØDE = -3 in the first case \$TRAJ namelist and make use of the fact that the initial \$SIMSEP and \$GUID namelists are saved on disc. After the first case, the \$SIMSEP and \$GUID namelists are repeated for each subsequent case. If this

operational procedure is used, those variables that are different from the first case need to be redefined during input after the variables read during the previous analysis are set to zero. In addition, the user must be careful to read zero-length namelists, i.e. \$SIMSEP or \$GUID card followed by a \$END card, for all namelists nominally requested even if the original is unchanged.

### 4.3.3 Monte Carlo

The most often used application of SIMSEP is in the Monte Carlo mode where all mission uncertainties are sampled and the trajectory is simulated accordingly. By looking at a number of typical missions, each with varying degrees of expected errors, an idea of the trajectory errors and required control corrections can be obtained. Statistical analysis of key parameters, such as final target error and mass, total required thrust control correction, etc. should evaluate or define realistic system constraints and probability of mission success. Obviously, a large number of missions, on the order of hundreds, are needed to have reliable statistical data, but even a few sample missions will reveal the scope of trajectory non-linearities and mis-modeling effects.

Input to a full Monte Carlo simulation is basically the same as that for the forced Monte Carlo. The namelists \$TRAJ, \$SIMSEP, and \$GUID are all needed with parameters as specified in the previous section. Additional variables to be considered in \$SIMSEP are

o IØUT to specify which sample missions are to be printed in detail; if only a few missions are

- generated then all of them should be printed;
- o IPUNCH = 1 to provide punched cards of all the cumulative statistics at the end of the run; this will allow a subsequent run to continue the statistical analysis rather than starting anew;
- o IRAN is the random number seed, typically set to unity for the first Monte Carlo run;
- o NCYCLE for the number of missions to be simulated;
- o CPMAX is an optional parameter for maximum computer processing time; if the actual processing time approaches CPMAX and it is estimated that the desired number of missions (NCYCLE) cannot be completed, then the current mission is completed and final output is generated. This includes punched cards for restarting another run.

The cost of simulating one sample mission with a number of guidance events can be quite high, especially if nonlinear guidance is used. Therefore, it is recommended that considerable planning be made before a full Monte Carlo study is run. Some of the possible short cuts are increasing the trajectory integration step size (STEP in \$TRAJ), using linear guidance wherever possible, minimizing the maximum number of iterations (NMAX in \$GUID) for nonlinear guidance, and eliminating unnecessary computations (for example, KTER = 0 in \$GUID). Another possibility is simulating only key mission segments, in particular the terminal approach phase, and studying other segments with a few simulations and/or with the forced Monte Carlo option.

### 4.3.4 Monte Carlo Continuation

It is often wise to divide a Monte Carlo analysis into smaller sample sizes then one large run. This serves two purposes: (1) the early detection of input errors before sizable computer time is spent, and (2) examination of missions as they are generated. The latter reason could conceivably result in a change in guidance strategy which would cause the Monte Carlo study to begin again.

A prerequisite to the Monte Carlo continuation are punched cards containing statistical results of all previous runs (IPUNCH = 1 in \$SIMSEP). The input to a Monte Carlo continuation is the same as in the previous section except for inclusion of the cumulative statistics. In \$SIMSEP these include the total thrust control correction covariance (only of the active controls used in guidance events) ATHCOV, total AV variance, ADVT, state covariance at the final time ENDCOV, final spacecraft mass variance AMASS, and the number of Monte Carlo cycles used to generate these statistics, MC. In each \$GUID namelist the parameters to be included are: state control covariance CCØVG, variance GMSCOV, thrust control correction matrix CNTCOV, state error covariance at the target time CCOVT, spacecraft mass variance at the target time TMSCØV, target error covariance TARCØV. CCØVT, TMSCØV, and TARCOV are computed only if KTER = 1. The number of maneuvers used in computing these statistics is specified by the variable MSAMP. All of the matrices noted above contain not only variances and covariances but also the cumulative mean values.

Note that the number of samples used to generate each maneuver may be different from each other and from the number of samples used to generate the total mission statistics. This results from maneuvers which do not converge or fail to achieve the weak convergence criteria (AØK) and are not included in the cumulative statistics. A divergent maneuver is taken to be "catastrophic" and the current Monte Carlo mission cycle is terminated with no further guidance events or statistics being computed until the next cycle.

Additional input for the Monte Carlo continuation run is the random number seed (IRAN in \$SIMSEP) which is typically set to the number of the next cumulative Monte Carlo cycle to be run. No changes in the reference trajectory, guidance strategy or error sources should be made between runs, otherwise the statistical results will be invalidated.

# 4.4 Case Stacking and Mixed Mode Operation

Case stacking is generally not recommended within modes and definitely not recommended for mixed mode operation. There is too much room for error, even for the experienced user, to assume the input and operation of one case will successfully provide the required data for the next case. There are a few exceptions which might warrent case stacking, and some of these conditions have been discussed in previous sections.

The MØDE flag in namelist \$TRAJ controls not only the mode (TOPSEP, GODSEP or SIMSEP), but also the point to which program logic will cycle back. A positive MØDE will return to MAPSEP main and will expect a \$TRAJ namelist for the next case. A negative MØDE will return to the mode main and expect a mode namelist. Note that once recycling is done within the mode, logic will never return to MAPSEP main, therefore, (1) any subsequent cases must apply only to that mode and (2) no changes to the reference mission are allowed.

Some of the possible conditions under which case stacking might be performed are:

Mode	MØDE Flag	Function	Conditions
TOPSEP		Trajectory Propagation	Generating time histories for different missions.
TOPSEP	+1 or -1	Initial Guess	Generating more than one initial guess for subsequent targeting by applying different sets of initial conditions, thrust parameters, and/or mission constraints for each case.

C	

(	MØDE	Function	Conditions
Mode	Flag	Function	Conditions
TOPSEP	-1	Grid Generation	Extending the scope of the tra- jectory grid.
TOPSEP	-1	Targeting	Examining various targeting strategies for a given mission.
GODSEP	+2	STM Generation	Generating a STM file with verification by a simple error analysis check case.
GODSEP	+2	Covariance Analysis	Generating a STM file for a unique mission with a subsequent error analysis.
GODSEP	+2	Covariance Analysis	Analyzing different navigation strategies and/or error sources for the same mission.
GODSEP	+2	Generalized Covariance	Performing a standard error analysis to generate a GAIN file and using generalized covariance to evaluate suspected mismodeling effects.
GODSEP	<b>+2</b>	Generalized Covariance	Analyzing different mismodeling assumptions with generalized covariance runs.
GODSEP	+2	PDOT	Performing parametric variations of dynamic error sources and evaluating their covariance propagation effects with the PDOT option.
Simsep	+3	Missions	Simulating several different missions for comparison.
SIMSEP	+3	Errors	Examining different sets of error sources on the same mission (forced Monte Carlo).
Simsep	-3	Guidance	Examining different guidance strategies for a given mission.



## 5.0 REFERENCES

- "MAPSEP, Volume I Analytical Manual," P. Hong, et al, Final Report for NASS-29566, December, 1973.
- "Low Thrust Orbit Determination Program Final Report, Contract NAS1-11686," P. Hong, et al, NASA CR-112256, December, 1972.
- 3. "MAPSEP, Volume III Programmer's Manual," K. Huling, et al, Final Report for NASS-29666, December, 1973.
- 4. "System Design Impact of Guidance and Navigation Analysis for a SEP 1979 Encke Flyby," P. Hong, G. Shults, R. Boain, Presented at AIAA 10th Electric Propulsion Conference, October 31, 1973.
- 5. "Guidance and Navigation Analysis for Solar Electric 1979 Encke Flyby and 1981 Encke Rendezvous Missions," P. Hong and G. Shults, MCR-73-182, July, 1973.
- 6. "Extended Definition Feasibility Study for a Solar Electric Propulsion Stage Concept Selection Midterm Briefing,"
  Rockwell Corporation, SD73-SA-0081-1, June 20, 1973.
- 7. "Guidance and Navigation Techniques for a Solar Electric Mercury Orbiter," P. Hong and G. Shults, AIAA Paper 72-917 Presented at AIAA/AAS Astrodynamics Conference, September 11, 1972.
- 8. "QUICKTOP III A Computer Program for Low-Thrust Trajectory and Mass Optimization," A. Mascy, R. Schaupp and S. Hayes, NASA TMX-62305, September, 1973.

1

9. "POST - Program to Optimize Shuttle Trajectories," D. Cornick, et al, MCR-71-287, 1971.